WESTERN-CULLEN-HAYES

RAILROAD PRODUCTS

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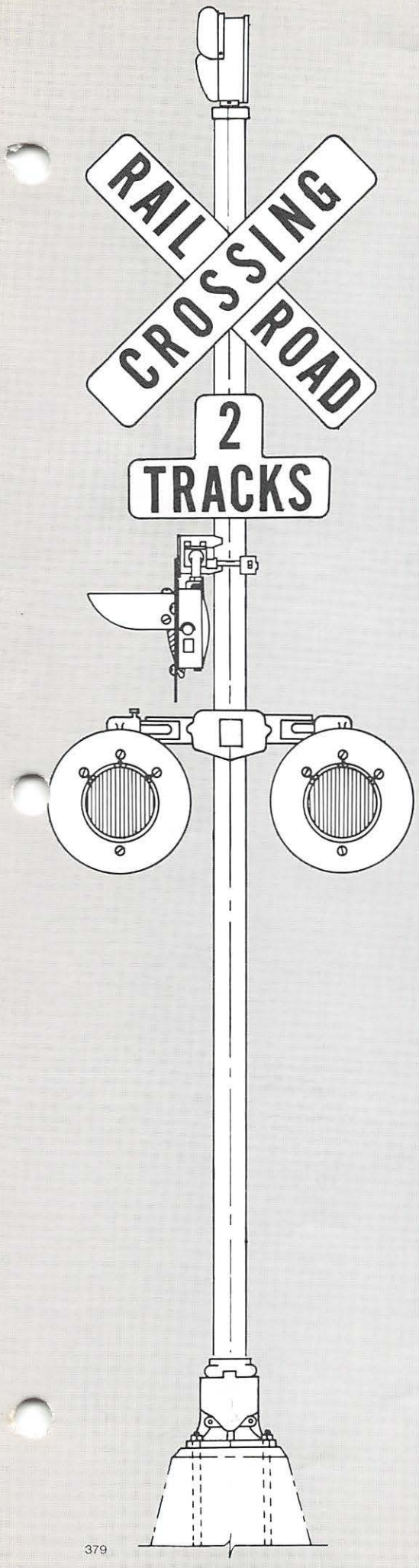

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WESTERN-CULLEN-HAYES, Inc.
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SECTION 1

Flashing Light Crossing Signals

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WESTERN-CULLEN-HAYES, Inc.

Type A-479-A
Flashing Light Highway Crossing Signal with Type 970-201 Light Units

ALL ALUMINUM

GENERAL INFORMATION

The Flashing Light Highway Crossing Signals manufactured by Western-Cullen Division represent the latest improvements in design. They meet all A.A.R. Specifications.

This catalog illustrates the most popular arrangements of flashing light signals and accessories, such as junction box-crossarm with two or four flashing light units for one-way or two-way indication. Other arrangements can be furnished to meet particular requirements.

Type 970-201 Crossing Signal Light unit housing is constructed of aluminum and has an efficient 8″ diameter parabolic reflector. The lamp receptacle is supported by a metal bracket, positioned to insure exact focusing of lamp filament to reflector. The filament is also in alignment with the side light openings which are fitted with clear glass discs, unless otherwise specified.

The Type 970-201 Crossing Signal differs from previous designs in that it includes an integral hub at the top threaded for 1¼″ pipe fitting. It can readily be attached to the usual junction box-crossarms by using adapter elbows with:

a — threaded fitting on one end and clamp fitting on the other, or
b — threaded fitting on both ends.

The Type 970-201 Crossing Signal Light unit is completely interchangeable with the previous design, Type 950A-201, by use of a proper elbow, as illustrated in this catalog section.

The Type 970-201 Crossing Signal Light unit is lighter in weight (9 pounds) than previous design. A Two-conductor cord is wired to the lamp unit and is long enough for attachment to terminals in the junction box of the crossarm.

The 960 types of junction box-crossarms are constructed of cast aluminum with two three-unit terminal strips: 12 binding posts. Each light unit is attached to a suspension bracket which provides for adjustment of the light beam alignment. Adjustment can be made of each light unit independently of the other units; horizontal and vertical alignment of each unit can be adjusted and locked in place independently.

The 960 type junction box-crossarm is the same as the previous type 950 design, except for adapter elbows used in attaching the light units.

Roundels furnished are the A.A.R. standard, 8⅜″ diameter, red, with photometric rating for color of 220-300. Listings below show the types available. No. 5323P roundels (red plastic) are furnished unless other type is specified on the order. (*)

The "NO TURN" signal, shown on Page 1-28 in this section may be used in conjunction with flashing light signals at locations where mounting of additional flashing light units would not provide suitable protection. It is the safest method of protecting a street parallel to a railroad without interfering with traffic not crossing the tracks.

In this catalog section no attempt has been made to show all possible combinations of flashing light highway crossing signals. We will gladly furnish plans and information for special assemblies.

**Note:* Roundels Available for Flashing Lights Units are:

CL-17	CL17P
5321	
5323	5323P
5327	
5332	
5357	

Speed Table For Crossing Signal Starts

Seconds		10	15	20	25	30	35	40	45	50	55	60
Miles Per Hour	Feet Per Second	Distance Traveled in Feet										
1	1.46	14.6	22.0	29.3	36.6	44.0	51.3	58.6	66.0	73.3	80.6	88.0
2	2.93	29.3	44.0	58.6	73.3	88.0	102.6	117.3	132.0	146.6	161.3	176.0
3	4.4	44	66	88	110	132	154	176	198	220	242	264
4	5.86	58.6	88	117.3	146.6	176	205.3	334.6	264	293.3	322.6	352
5	7.3	73	110	147	183	220	257	293	330	367	403	440
10	14.6	146	220	293	366	440	513	587	660	733	807	880
15	22.0	220	330	440	550	660	770	880	990	1,100	1,210	1,320
20	29.3	293	440	587	733	880	1,027	1,173	1,320	1,467	1,613	1,760
25	36.7	367	550	733	917	1,100	1,283	1,467	1,650	1,833	2,017	2,200
30	44.0	440	660	880	1,100	1,320	1,540	1,760	1,980	2,200	2,420	2,640
35	51.3	513	770	1,027	1,283	1,540	1,797	2,053	2,310	2,567	2,823	3,080
40	58.7	587	880	1,173	1,467	1,760	2,053	2,347	2,640	2,933	3,227	3,520
45	66.0	660	990	1,320	1,650	1,980	2,310	2,640	2,970	3,300	3,630	3,960
50	73.3	733	1,100	1,467	1,833	2,200	2,567	2,933	3,300	3,667	4,033	4,400
55	80.7	807	1,210	1,613	2,017	2,420	2,823	3,227	3,630	4,033	4,437	4,840
60	88.0	880	1,320	1,760	2,200	2,640	3,080	3,520	3,960	4,400	4,840	5,280
65	95.3	953	1,430	1,907	2,383	2,860	3,337	3,813	4,290	4,767	5,243	5,720
70	102.7	1,027	1,540	2,053	2,567	3,080	3,593	4,107	4,620	5,133	5,647	6,160
75	110.0	1,100	1,650	2,200	2,750	3,300	3,850	4,400	4,590	5,500	6,056	6,600
80	117.3	1,173	1,760	2,347	2,933	3,520	4,107	4,693	5,280	5,867	6,453	7,040
85	124.7	1,247	1,870	2,493	3,117	3,740	4,363	4,987	5,610	6,233	6,858	7,480
90	132.0	1,320	1,980	2,640	3,300	3,960	4,620	5,280	5,940	6,600	7,260	7,920
95	139.3	1,393	2,090	2,787	3,483	4,180	4,877	5,573	6,270	6,967	7,663	8,360
100	146.7	1,467	2,200	2,933	3,667	4,400	5,133	5,867	6,600	7,333	8,067	8,800
105	154.0	1,540	2,310	3,080	3,850	4,620	5,390	6,160	6,930	7,700	8,470	9,240
110	161.3	1,613	2,420	3,227	4,033	4,840	5,647	6,453	7,260	8,067	8,873	9,680
115	168.6	1,686	2,530	3,373	4,217	5,060	5,903	6,747	7,590	8,434	9,277	10,120
120	176.0	1,760	2,640	3,520	4,400	5,280	6,160	7,040	7,920	8,800	9,680	10,560
125	183.3	1,833	2,750	3,667	4,583	5,500	6,417	7,334	8,250	9,167	10,084	11,000
130	190.7	1,907	2,860	3,813	4,767	5,720	6,673	7,627	8,580	9,534	10,487	11,440

NOTE: Where length of track circuit is known, time in seconds can be determined by dividing its length by "Feet Per Second" at train speed selected.

* Does not allow for drop-away time of relays.

Information Desired With Inquiry For Complete Highway Crossing Signal Installation

We are pleased to furnish engineering information and to quote on requirements for Highway Crossing Signal Installations. Where possible, inquiries should be accompanied by a sketch, or preferably, a scale track plan showing the location of the highway.

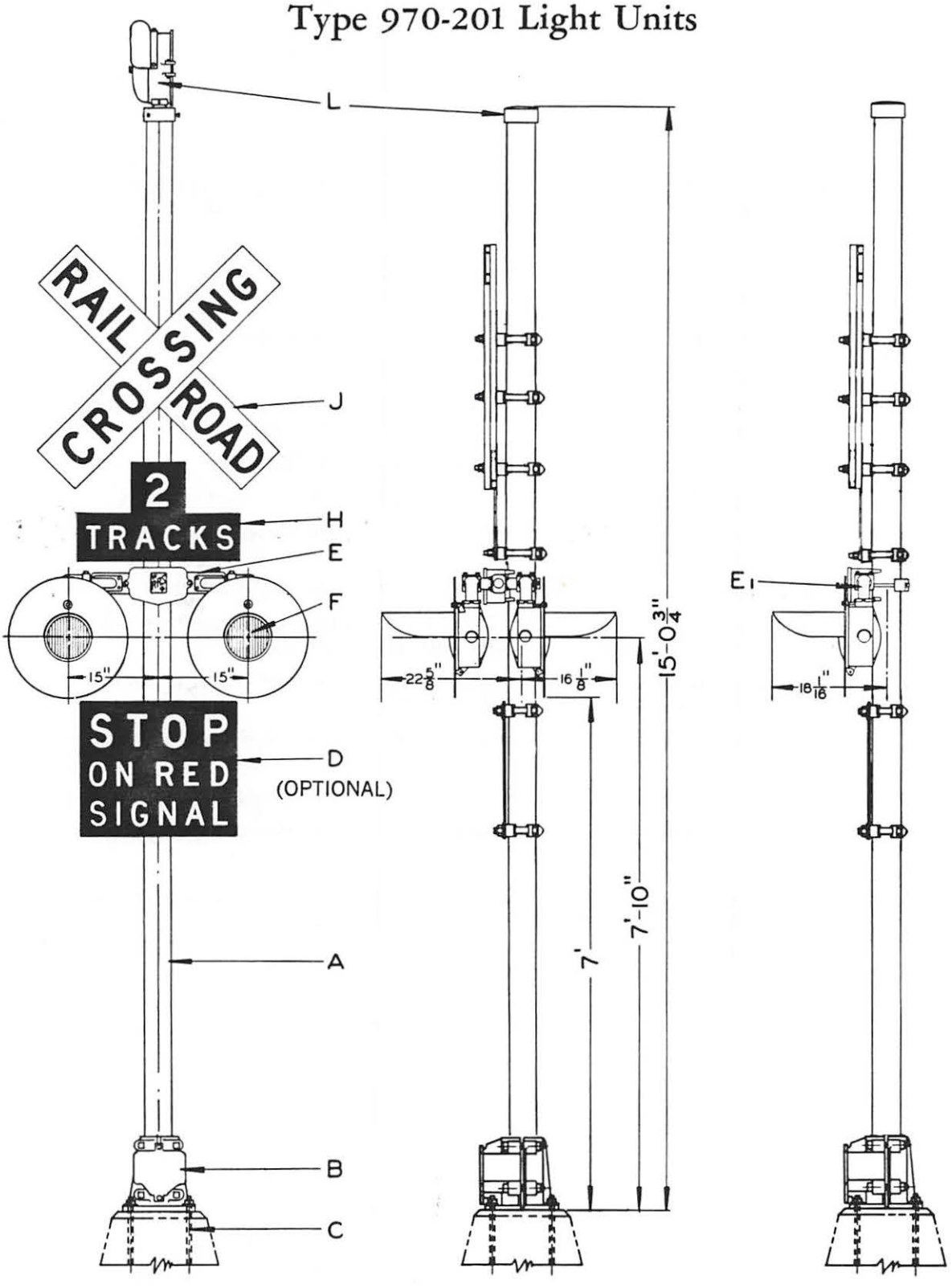
The following information is especially desired:

1. Is "Railroad Crossing" sign required?*
2. Is number of tracks sign required? If so, advise numeral.*
3. Is "Stop on Red Signal" sign required?**
4. Advise maximum authorized speed of train movement. (A.A.R. recomcomendation is 20 seconds warning for fastest train)
5. What special operating conditions exist within the area?
6. Specify whether there are any switches within the approach section.
7. Specify if there is any signal equipment now in place which might be affected by this installation.
8. Specify whether Diesel-Electric or Electric propulsion railway.
9. What electric power is available for operation of signals? If D.C., specify voltage; if A.C., specify voltage and frequency.
10. Specify whether stand-by electric service is required. (Can continuity of available service be depended upon?)
11. Specify weight and type of rail and whether four or six hole insulated rail joints.
12. Specify if track ballast is rock, gravel, sand, cinders, or other material.
13. State whether highway is paved. Width of highway or travelled portion. Specify class of paving.

*Available in Reflector Unit Type, both synthetic enamel and vitreous enamel finish and in Reflex-Reflecting Sheet Type.

**Not available in vitreous enamel finish.

Type A-479-A
Flashing Light Highway Crossing Signal with Type 970-201 Light Units



Ref. A

Ref. A1

Ref. B1

Type A-479-A
Flashing Light Highway Crossing Signal with Type 970-201 Light Units

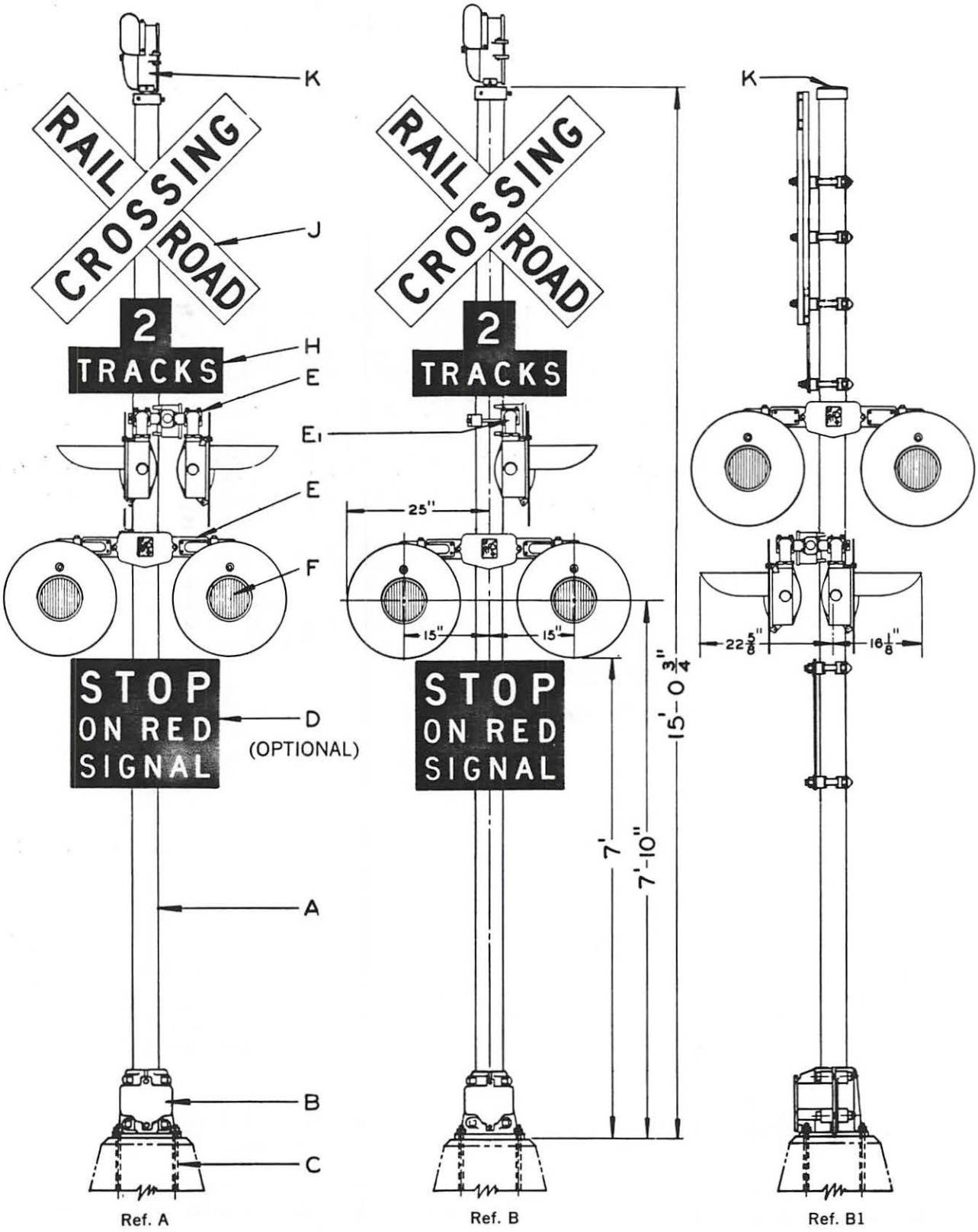
By far the majority of Flashing Light Type Highway Crossing Signal installations require two Flashing Light signals, two-way indication; one with a bell and one with a pinnacle, although, frequently two bells are used. Western's A-479A all-aluminum assembly with 4" I.D. mast, junction box type base having 9½"x9½" anchor bolt spacing and reflex-reflecting sheet type signs on extruded or sheet aluminum, meet most requirements. Type 222CR Crossing Bell is usually required, but Type 1275CR Pedestrian Crossing Bell will be supplied when specified. Plastic roundels having 30° horizontal spread and 15° down deflection are furnished as standard. For other Roundels see Page 1-14.

Below are ordering references for these most frequently used assemblies. See Page 1-10 for information for ordering variations from these assemblies.

If "Stop-On-Red Signal" sign is required it must be specified.

Ref.	Description	Piece No.
A	Flashing light Highway Crossing Signal complete; two-way indication, with 222CR Bell. (specify numeral on track sign and voltage and wattage of lamp bulbs, if required)	A479AB
A1	Same as Ref. A, but with pinnacle in place of bell	A479AP
B	Flashing Light Highway Crossing Signal complete; one-way indication, with 222CR Bell. (specify numeral on track sign and voltage and wattage of lamp bulbs, if required)	A479AB-1
B1	Same as Ref. B, but with pinnacle in place of bell	A479AP-1

Type A-479-A
Flashing Light Highway Crossing Signal with Type 970-201 Light Units



Type A-479-A
Flashing Light Highway Crossing Signal with Type 970-201 Light Units

Many locations require Flashing Light Highway Crossing Signals having extra light assemblies to provide indication to traffic on streets or highways paralleling the railroad, or on curved approaches, in addition to the Flashing Lights that provide the indication to traffic on the street or highway that crosses the tracks.

Generally these extra lights are mounted 90° to the right of and above the main lights, as illustrated.

The extra lights can be mounted at any angle which may be specified, or even on special brackets as shown on Page 1-27. Given the requirements we will be pleased to submit drawings of assemblies required.

These commonly used assemblies, with extra lights, are usually Western's all-aluminum A479A type with 4" I.D. mast, junction box type base having 9½" x 9½" anchor bolt spacing and reflex-reflecting sheet type signs on extruded or sheet aluminum. One signal with 222CR bell and one with pinnacle are normally required at each crossing, but the Type 1275CR bell will be supplied when specified. Plastic roundels having 30° horizontal spread and 15° down deflection are furnished as standard. For other Roundels see Page 1-14.

Below are ordering references for the assemblies illustrated on the opposite page. See Page 1-10 for information for ordering variations from these assemblies.

If "Stop-On-Red Signal" sign is required it must be specified.

Ref.	Description	Piece No.
A	Flashing Light Highway Crossing Signal complete; two-way indication main lights, two-way indication extra lights mounted 90° to the right and 222CR Bell. (specify numeral on track sign and voltage and wattage of lamp bulbs)	A479AB-8
A1	Same as Ref. A, but with pinnacle in place of bell	A479AP-8
B	Flashing Light Highway Crossing Signal complete; two-way indication main lights, with one-way indication extra lights mounted 90° to the right and 222CR Bell. (specify numeral on track sign and voltage and wattage of lamp bulbs)	A479AB-6
B1	Same as Ref. B but with Pinnacle in place of bell	A479AP-6

Parts for Type A-479-A Flashing Light Highway Crossing Signal with Type 970-201 Light Units

When ordering assemblies other than are shown on Pages 1-6 to 1-9 please use the reference data below, enumerating components required.

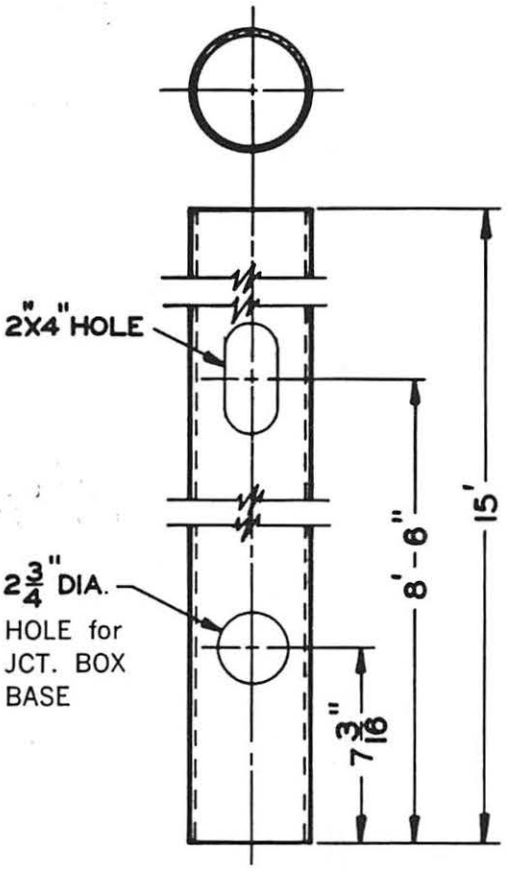
If extra light assemblies are called for, specify degree of angle to right or left of main lights.

We will gladly furnish plans and information for special assemblies, including supporting brackets as shown on Page 1-27, Marker Lights on Page 1-26, etc.

Ref.	Description
1	Type A479-A Aluminum Flashing Light Highway Crossing Signal with the following equipment.
A	Pipe Mast (See Page 1-11)
B	Base (See Page 1-13)
C	Anchor Bolts (See Page 1-11)
D	"Stop on Red Signal" sign (See Page 1-21)
E	Flashing Light Assembly (See Page 1-15)
F	Roundels (See Page 1-3 or 1-14)
G	Specify voltage and wattage of lamps
H	"Tracks" sign (See Page 1-23)
J	"Railroad Crossing" sign (See Page 1-25)
K	Bells (See Section 5)
L	Pinnacle (See Page 1-11)

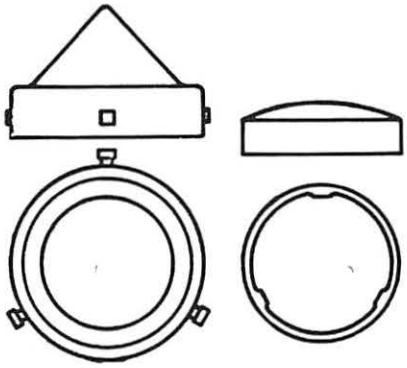
Parts for Type A-479-A
Flashing Light Highway Crossing Signals

PIPE MAST

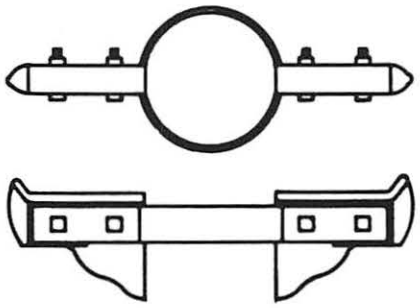


Ref. A

PINNACLE

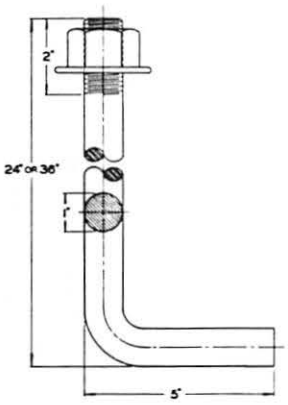


Ref. K1 Ref. K

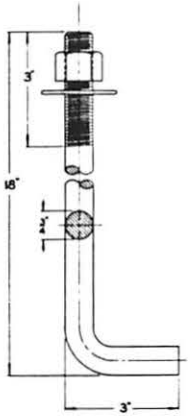


Ref. L

ANCHOR BOLTS



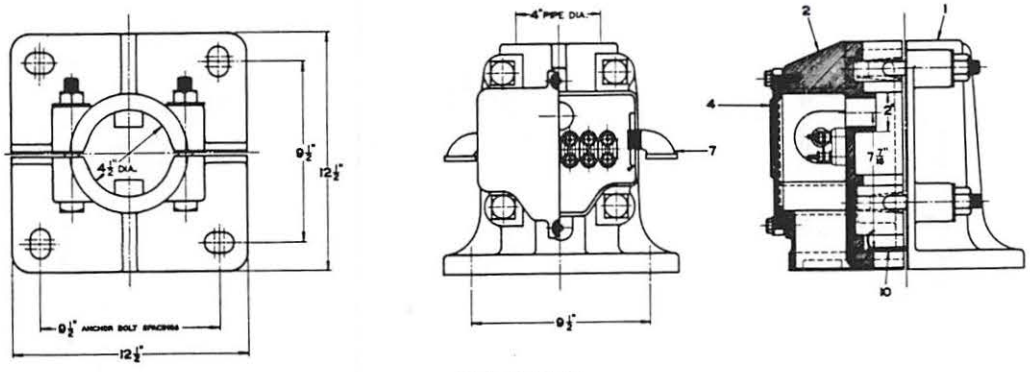
Ref. C & C1



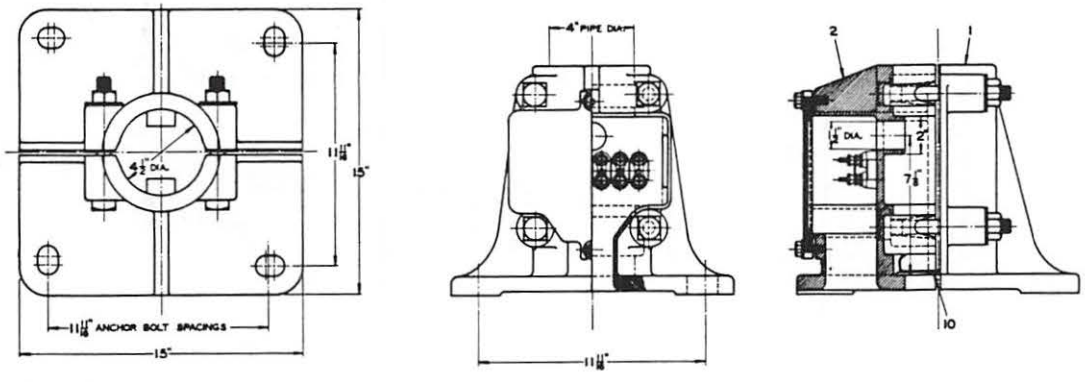
Ref. C2

Ref.	Description	Piece No.
A	Pipe Mast. 4" I.D. x 15' long, drilled for Jct. Box Base	714-50U-2
A1	Pipe Mast, 4" I.D. x 15' long	714-50-1
A2	Pipe Mast, 5" I.D. x 15' long, drilled for Jct. Box Base	715-50U-2
A3	Pipe Mast, 5" I.D. x 15' long	715-50-1
C	Type 11079 Anchor Bolt 1" x 36" lg. complete with washer and hex. nut (galvanized)	11079
C1	Same as Ref. C, but 24" lg.	11079-1
C2	Type 2144 Anchor Bolt ¾" x 18" lg.	2144-18
K	Type 110A Pinnacle for 4" I.D. pipe post	110A-6
K1	Type 110A Pinnacle for 5" I.D. pipe post	110-A 8
L	Pole Step complete for 4" I.D. pipe post	10151
L1	Same as Ref. L. but for 5" I.D. pipe post	10152

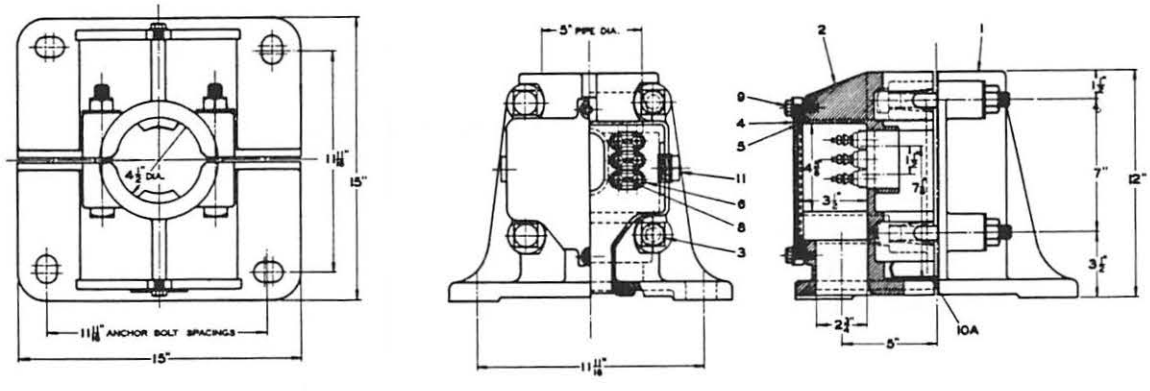
Type A-479-A
Flashing Light Highway Crossing Signals
Clamp Type Bases



Ref. B & B3



Ref. B1 & B5



Ref. B6 & B7

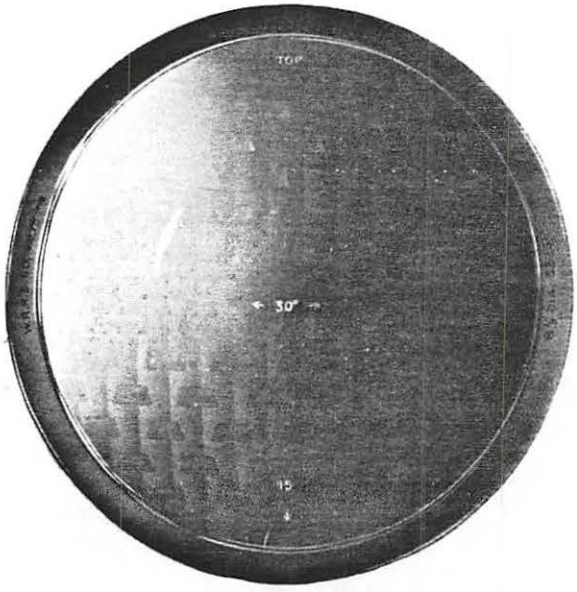
Parts for Type A-479-A
Flashing Light Highway Crossing Signals
Clamp Type Bases

These clamp type signal bases are available as plain split bases or with one or both halves having a cast-in junction box capable of holding a bakelite terminal strip of 6 units (12 binding posts). The base may be furnished complete or the half with the junction box may be obtained separately for use with signal assemblies already installed.

Ref.	Description	Piece No.
B	Type 14492 Plain Split Base Assembly, for 4" I.D. pipe, with 9½" x 9½" anchor bolt spacing. Cast Aluminum	14492A
B1	Type 2143 Plain Split Base Assembly, for 4" I.D. pipe, with 11-11/16" x 11-11/16" anchor bolt spacing. Cast Aluminum	2143A
B2	Type 2145 Plain Split Base Assembly, for 5" I.D. pipe with 11-11/16" x 11-11/16" anchor bolt spacing. Cast Iron	2145
B3	Type 2146 Split Base Assembly with junction box on one half and six terminals, for 4" I.D. pipe, with 9½" x 9½" anchor bolt spacing. Cast Aluminum.	2146A-11
B4	Same as Ref. B3 but junction box on both halves	2146A-12
B5	Type 2147 Split Base Assembly with junction box on one half and six terminals, for 4" I.D. pipe, with 11-11/16" x 11-11/16" anchor bolt spacing. Cast Aluminum.	2147A-11
B6	Same as Ref. B5 but junction box on both halves	2147A-12
B7	Type 2148 Split Base Assembly with junction box on one half and six terminals, for 5" I.D. pipe, with 11-11/16" x 11-11/16" anchor bolt spacing. Cast Iron.	2148-11
B8	Same as Ref. B7, but junction box on both halves	2148-12
	REPLACEMENT PARTS	
1	Plain Half Base Casting for ref. B (cast aluminum)	1449A-1
1A	Plain Half Base Casting for ref. B1 (cast aluminum)	2143A-1
1B	Plain Half Base Casting for ref. B2 (cast iron)	2145-1
2	Junction Box Half Casting for ref. B3 & B4 (cast aluminum)	2146A-15C
2A	Junction Box Half Casting for ref. B5 & B6 (cast aluminum)	2147A-15A
2B	Junction Box Half Casting for ref. B7 & B8 (cast iron)	2148-15
3	¾" x 6½" lg. mach. bolt with sq. hd. and hex. nut	
4	Cover (cast iron)	2148-16
4A	Cover (cast aluminum)	2148A-16
5	Flax packing 5/16" sq. x 29" lg.	
6	Terminal strip (12 post)	2506-112
6A	Terminal strip for ref. B7 & B8 only (6 post)	2506-106
7	Ventilator	1143-16
8	No. 10-32 x ⅝" lg. rd. hd. mach. screw	
9	⅜"—16 x 1¼" lg. hex. cap screw and plain washer	
10	Pipe shield	2147-24
10A	Pipe shield for ref. B7 & B8 only	2149-24
11	Pipe Plug, 1¼"	

WESTERN-CULLEN-HAYES, Inc.

Parts for Type A-479-A
Flashing Light Highway Crossing Signals
Roundels



Ref. F4

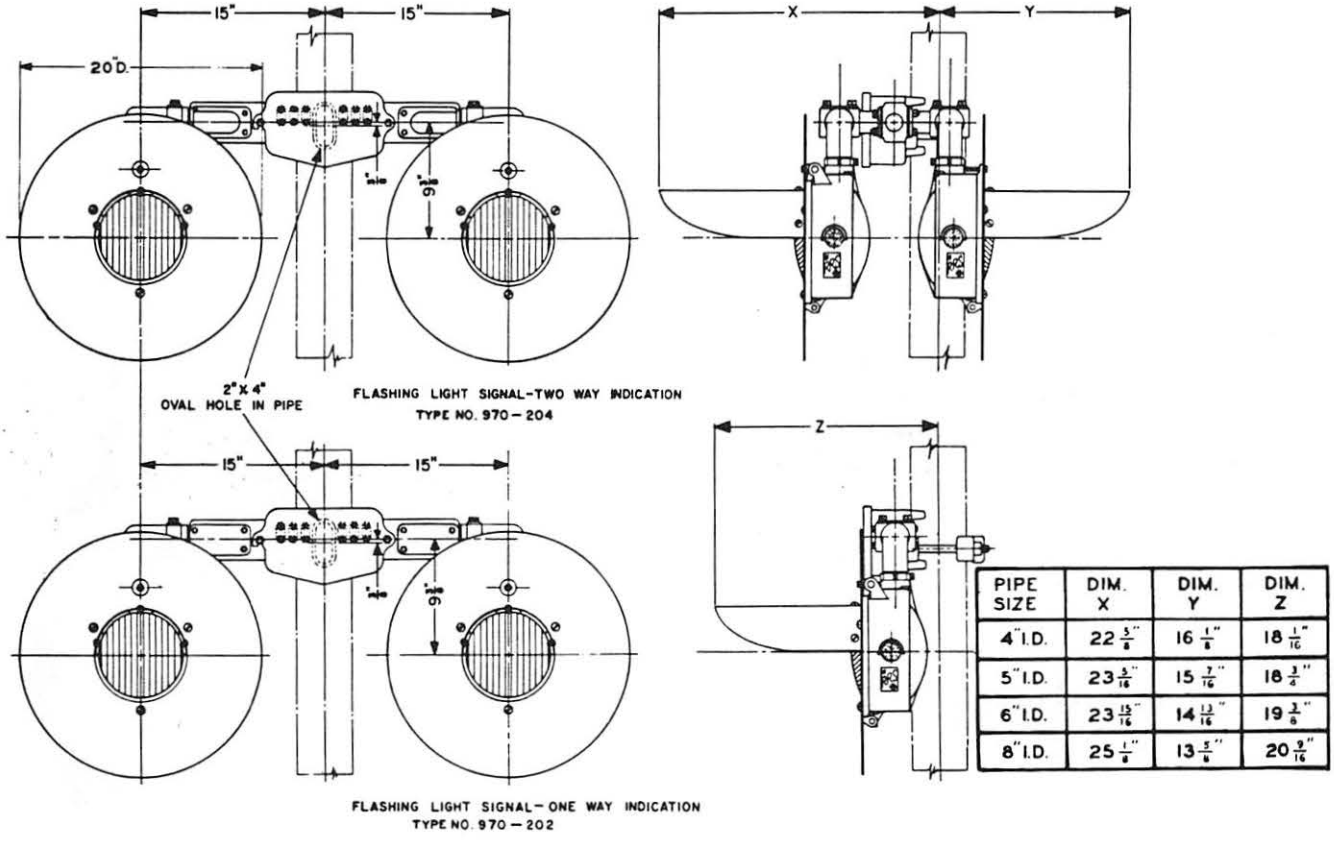
Roundels furnished are A.A.R. Standard 8⅜" diameter, Red, with photometric rating for color of 220-300. No. 5323 and 5323P Roundels are recommended by the A.A.R. Signal Section, for general use.

Types CL-17P, 5323P and 5357 are plastic.

Ref.		Piece No.
F	Type CL-17 Roundel, 30° horizontal spread, glass	CL-17
F1	Type CL-17 Roundel, 30° horizontal spread, plastic	CL-17RP
F2	Type 5323 Roundel, 30° horizontal with 15° downward deflection, glass	5323
F3	Type 5323P Roundel, 30° horizontal with 15° downward deflection, plastic	5323P
F4	Type 5327 Roundel, 20° horizontal with 32° downward deflection, glass	5327
F5	Type 5332 Roundel, 70° horizontal, glass	5332
F6	Type 5357 Roundel, long range 20° (15°-5°) horizontal deflecting, 10° vertical spread	5357

Parts for Type A-479-A Flashing Light Highway Crossing Signal with Type 960 Crossarm and Type 970-201 Light Units

CAST ALUMINUM CROSSARM, BRACKETS AND ELBOWS SHEET ALUMINUM BACKGROUNDS AND HOODS



PIPE SIZE	DIM. X	DIM. Y	DIM. Z
4" I.D.	22 5/8"	16 1/8"	18 1/16"
5" I.D.	23 5/16"	15 7/16"	18 3/4"
6" I.D.	23 15/16"	14 13/16"	19 3/8"
8" I.D.	25 1/8"	13 5/8"	20 9/16"

Type 970-201 Light Units are equipped with Parabolic glass reflectors, 8 3/8" diameter red roundels and single contact, bayonet base, receptacles positioned to accommodate S-8 or S-11 lamp bulb, having 1 1/4" light center length.

Ref.	Description	Piece No.
E	Type 970 Flashing Light Unit Assembly with Type 960 junction box crossarm for two-way indication with 4 light units. (specify I.D. of pipe and roundels)	970-204
E1	Same as Ref. E but one-way indication with 2 light units	970-202
E2	Type 970 Light Unit only (specify Roundel)	970-201
E3	Type 960 Junction Box Crossarm for two-way indication. (specify I.D. of pipe)	960-5
E4	Same as Ref. E3 but for one-way indication	960-3

For replacement parts see page 1-17 and 1-19.

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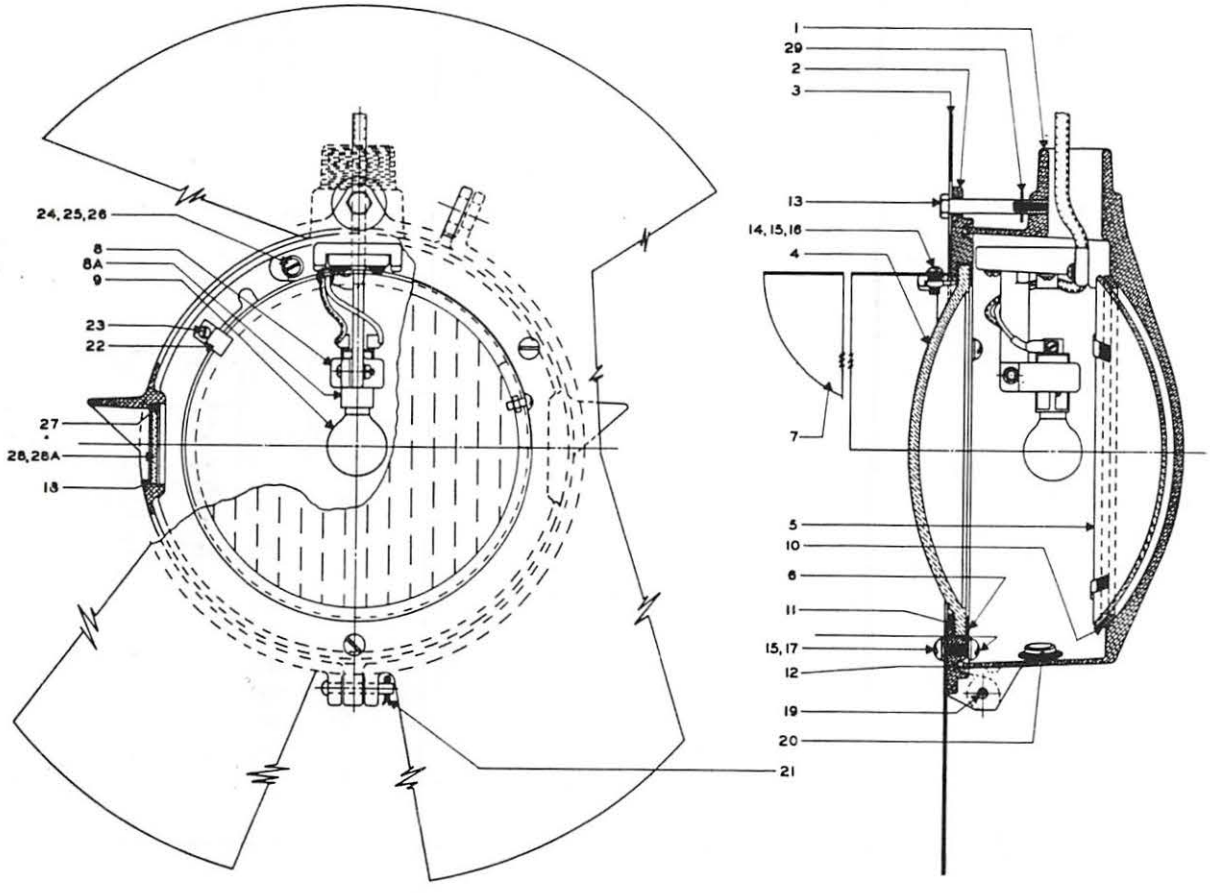
Parts for Type A-479-A
Flashing Light Highway Crossing Signal
Type 970-201 Light Unit



Ref. A

Parts for Type A-479-A
Flashing Light Highway Crossing Signal
Type 970-201 Light Unit

All castings in the Type 970-201 Light Unit are aluminum, with sheet aluminum hood and background.

Ref. No.	Description	Piece No.
A	Type 970 Flashing Light Unit assembly, specify roundel desired and voltage and wattage of lamp, if required	970-201
	REPLACEMENT PARTS	
1	Case	970-1
2	Cover	970-2
3	Background	960-13
4	Roundel (see page 1-3)	
5	Reflector	950-275C
6	Roundel Retainer	960-19
7	Hood	960-9
8	Lamp Bracket and Socket sub-assembly	970-20
8A	Lamp Receptacle with insulating sleeve	970-18
9	Electric Lamp (specify voltage and wattage)	
10	Reflector Supporting Ring	970-16
11	Roundel Gasket	825
12	Door Packing	960-18
13	5/16" x 2¼" lg. hex. hd. cap screw, steel	
14	¼" x 20 x ⅓" lg. rd. hd. mach. screw	
15	¼" Internal Tooth Lock Washer	
16	¼"-20 Sq. nut, brass	
17	¼"-20 x ¼" lg. rd. hd. mach. screw, brass	
18	Side Light Gasket	960-48
19	Hinge Pin	950-259
20	Ventilator	1265-6
21	3/32" x ⅝" lg. Cotter Pin	
22	Reflector Holding Clip	970-17
23	No. 8-32 x ½" lg. rd. mach. screw	
24	No. 10-24 x ¾" lg. rd. hd. mach. screw	
25	No. 10 Plain Washer	
26	No. 10 Spring Lock Washer	
27	Retaining Ring	960-7
28	Side Light Glass Disc	811
28A	Side Light Blank Plate	950A-261
29	Crescent Retainer	960-15

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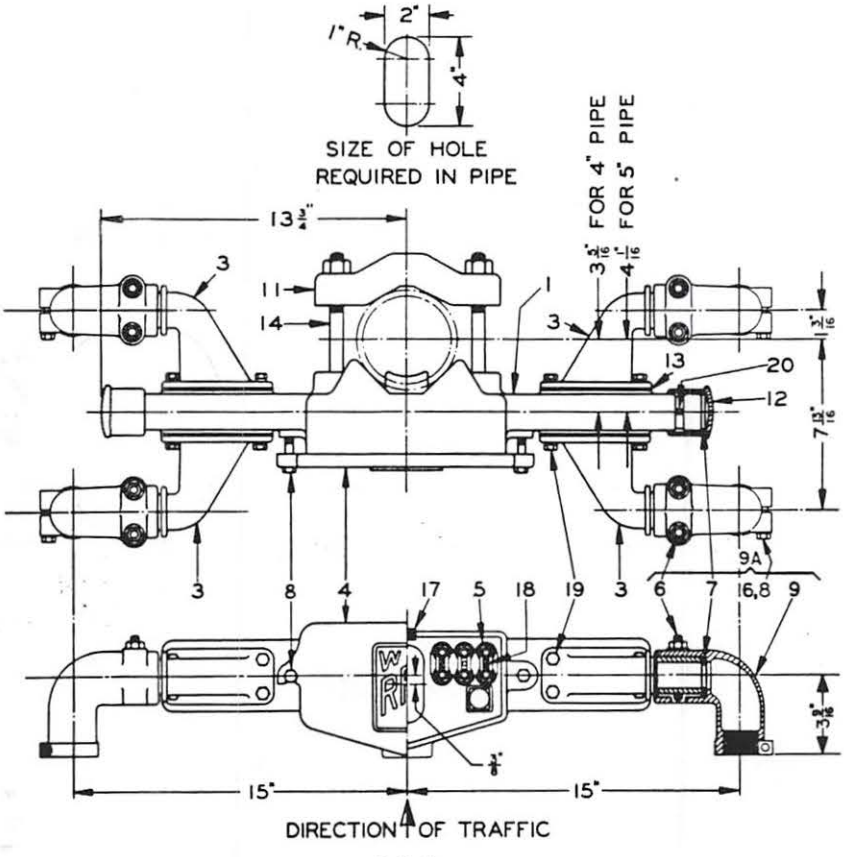
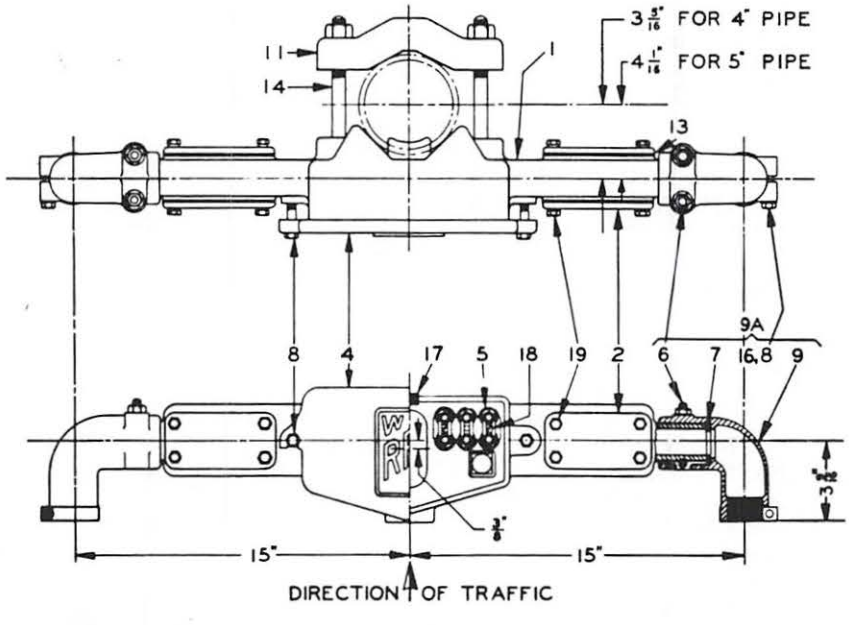
Parts for Type A-479-A
Flashing Light Highway Crossing Signals
Type 960 Crossarm



Ref. A



Ref. B

Parts for Type A-479-A
Flashing Light Highway Crossing Signals
Type 960 Junction Box Crossarm

All castings in the Type 960 Junction Box Crossarms are aluminum. Replacements parts of cast aluminum are interchangeable with cast iron parts of former designs and will be furnished for all replacements.

Ref.	Description	Piece No.
A	Type 960 Junction Box Crossarm for two-way indication. (Specify I.D. of pipe)	960-5
B	Same as Ref. A but for one-way indication	960-3
	REPLACEMENT PARTS	
1A	Junction Box Crossarm, sub-assembly of Ref. 1, 4, 5, 17 & 18	950A-62
2	Cover Plate	950A-39
3	Bracket, 3½" extension	950A-57
4	Cover	950A-20
5	Terminal Block, complete, 6 binding posts	2506-106
6	"U" Bolt, ⅜"-16, complete with nuts	950-31
7	Gasket, sponge rubber	950-28
8	⅜"-16 x 2" lg. hex. hd. cap screw, steel	
9	Supporting Bracket casting only	960-131
9A	Supporting Bracket, sub-assembly of Ref. 6, 7, 8, 9, & 16	960-163
11	Adapter Clamp	950A-34
12	Cap	950A-29
13	Gasket, Cork	950-27
14	⅝"-11 x 6" lg. sq. hd. mach. bolt and hex. nut for 4" pipe	
14A	⅝"-11 x 7½" lg. sq. hd. mach. bolt and hex. nut for 5" pipe	
16	⅜" lock washer, steel	
17	⅜" dia. x 27" lg. torchwick packing	
18	No. 10-32 x ⅝" lg. fil. hd. mach. screw and lock washer, steel	
19	⅜"-16 x ⅞" lg. hex. hd. cap screw and lock washer, steel	
20	¼"-20 x ½" lg sq. hd. cup pt. set screw, steel	

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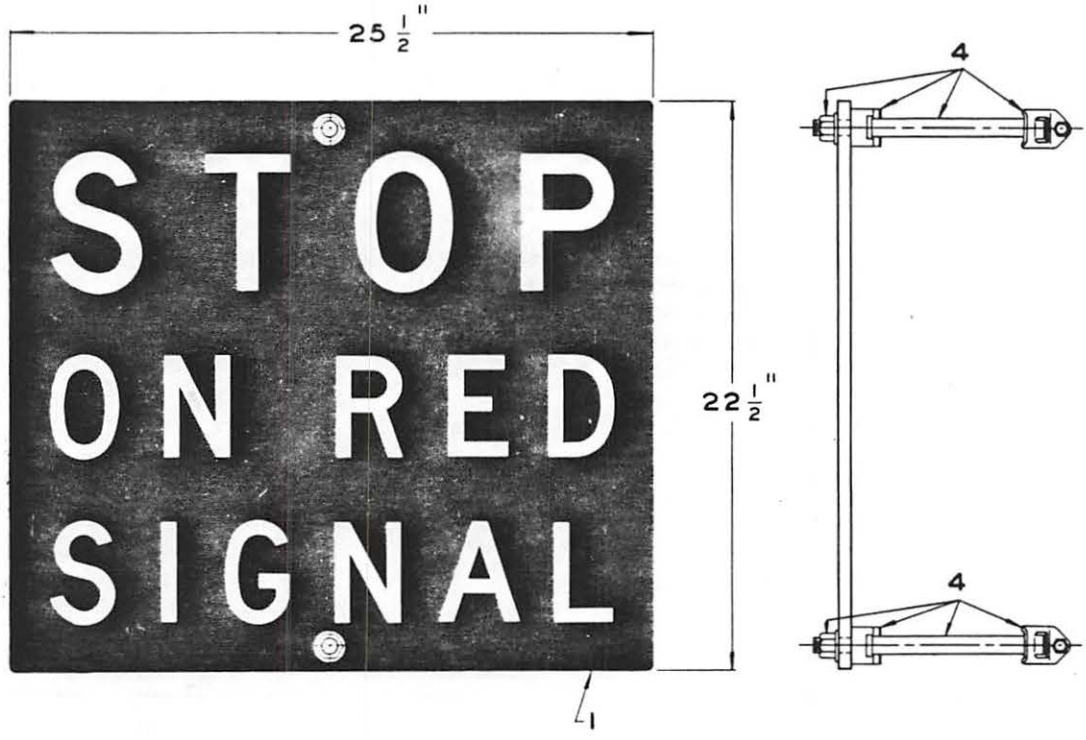
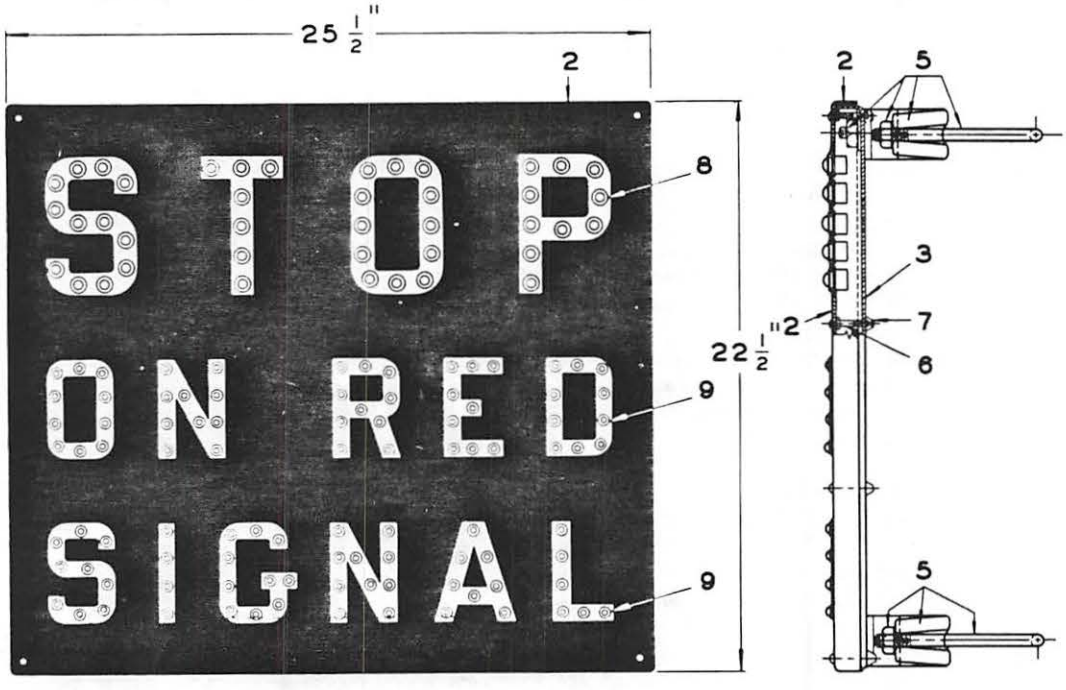
Parts for Type A-479-A
Flashing Light Highway Crossing Signals

"STOP ON RED SIGNAL" SIGN



Ref. D



Ref. D1 & D2

Parts for Type A-479-A
Flashing Light Highway Crossing Signals

"STOP ON RED SIGNAL" SIGN

Ref. D

Ref. D1 & D2

Type 3366 "Stop on Red Signal" sign, Reflex-Reflecting Sheet type is on an aluminum plate. White letters on black background. Stainless steel strapping is used for mounting the sign on the pole.

Type 3366 "Stop on Red Signal" sign, Synthetic Baked Enamel, embossed steel front plate with front entrance clear reflector units and telescoping steel back. The screws and nuts are theft-resisting type. White letters on black background. Adaptor clamps and "U" bolts are used for mounting the sign on the pole.

Ref.	Description	Piece No.
D	Type 3366 "Stop on Red Signal" sign. Reflex-Reflecting sheet type on aluminum plate with stainless steel strap kit complete for mounting on 4" or 5" I.D. pipe mast	3366-7
D1	Type 3366 "Stop on Red Signal" sign with synthetic baked enamel finish and adaptor clamp kit complete for mounting on 4" I.D. pipe mast	3366-4
D2	Same as Ref. D1 but for 5" I.D. pipe mast	3366-4A
	REPLACEMENT PARTS	
1	"Stop on Red Signal" aluminum plate only for Ref. D	3366-710
2	"Stop on Red Signal" sign, synthetic baked enamel finish, for Ref. D1 & D2	3366-4L
4	Stainless steel strap mounting kit complete for one sign (specify pipe size)	3364-70
5	U-bolt for 4" I.D. pipe	3364-2
5A	U-bolt for 5" I.D. pipe	3364-5
6	3/16"-24 x 1⅜" lg. stl. carriage bolt, (cad. pl.)	
7	3/16"-24 Theftproof nut	3380-27X
8	No. 3F Plastic Reflector unit, clear	
9	No. 5F Plastic Reflector unit, clear	

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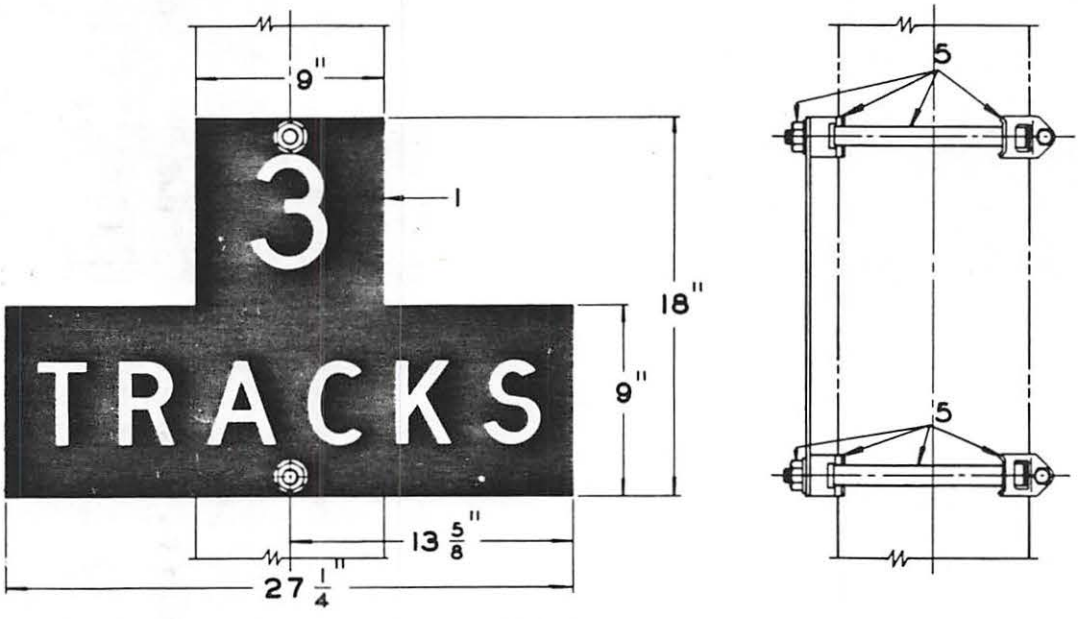
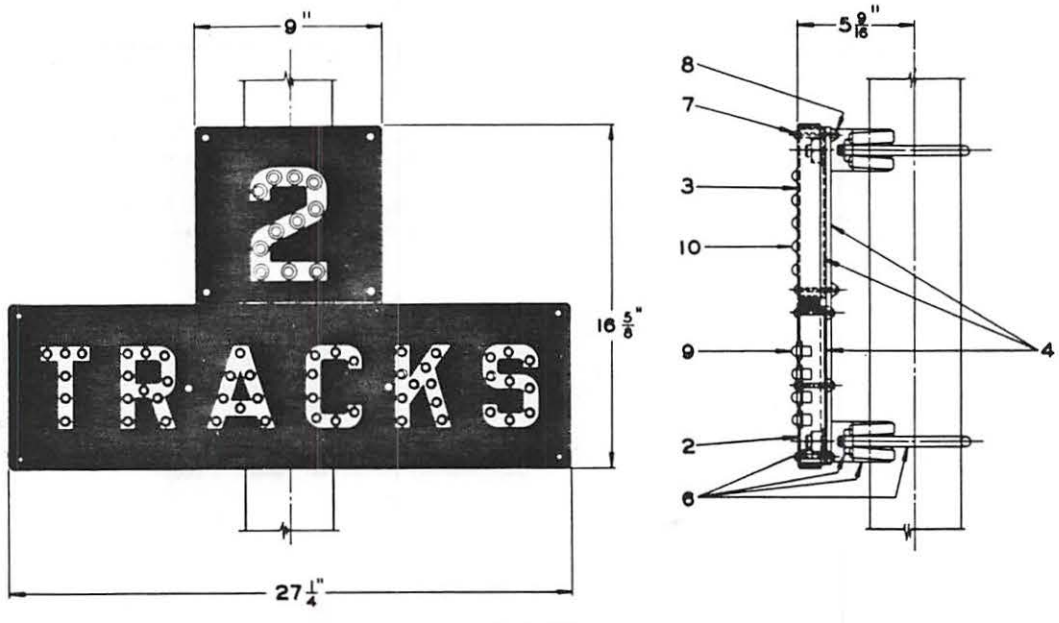
Parts for Type A-479-A
Flashing Light Highway Crossing Signals

NUMBER OF TRACKS SIGN



Ref. H



Ref. H2

Parts for Type A-479-A
Flashing Light Highway Crossing Signals

NUMBER OF TRACKS SIGN

Ref. H

Ref. H2

Type 3368 Number of Tracks Sign Reflex-Reflecting Sheet type is on an aluminum plate with white letters on black background, or black letters on white background. Stainless steel strapping is used for mounting the sign on the pole.

Type 3368 Number of Tracks Sign with Synthetic baked enamel; embossed steel front plate with front entrance clear reflector buttons and telescoping steel back. All the screws and nuts are stainless steel, theft-resisting type. White letters on black background. Adaptor clamps and "U" bolts are used for mounting the sign on the pole.

The Vitreous Enamel finish sign is the same as the Synthetic but does not have embossed letters.

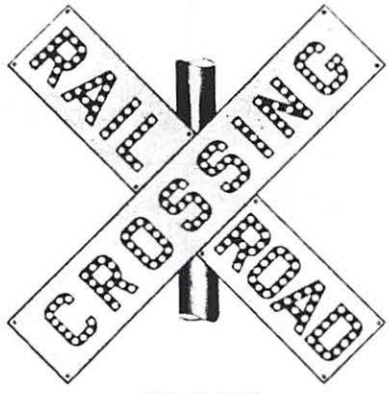
Specify numeral required.

Ref.	Description	Piece No.
H	Type 3368 Number of Tracks Sign, Reflex-Reflecting sheet type on aluminum plate with white letters on black background and stainless steel strap kit complete for mounting on 4″ or 5″ I.D. pipe mast. (Specify numeral required.)	3368-7
H1	Same as Ref. H, but with black letters on white background	3368-7C
H2	Type 3368 Number of Tracks Sign, Synthetic Baked Enamel finish, and adaptor clamp kit complete for mounting on 4″ I.D. pipe mast. (Specify numeral required.)	3368-4
H3	Same as Ref. H2, but for 5″ I.D. pipe mast	3368-4A
H4	Type 3368 Number of Tracks Sign, Vitreous Enamel finish, and adaptor clamp kit complete for mounting on 4″ I.D. pipe mast. (Specify numeral required.)	3368-3
H5	Same as Ref. H4, but for 5″ I.D. pipe mast	3368-3A
	REPLACEMENT PARTS	
1	Number of Tracks aluminum plate only, white letters on black background. (Specify numeral required.)	3368-710
1A	Same as Ref. 1 but black letters on white reflecting background	3368-710C
2	"Tracks" front plate, synthetic baked enamel finish for Ref. H2 and H3	3368-27D
2A	Same as Ref. 2 but vitreous enamel for Ref. H4 and H5	3368-27C
3	Numeral front plate synthetic baked enamel finish for Ref. H2 and H3. (Specify numeral required.)	3368-32D
3A	Same as Ref. 3 but vitreous enamel for Ref. H4 and H5	3368-32C
4	Stainless steel strap mounting kit, complete for one sign. (specify pipe size)	3364-70
5	U-bolt for 4″ pipe	3364-2
6	U-bolt for 5″ pipe	3364-5
7	3/16″-24 x 1⅜″ lg. stl. carriage bolt, (cad. pl.)	
8	3/16″-24 theftproof nut	3380-27X
9	No. 5F Plastic Reflector unit, clear	
10	No. 3F Plastic Reflector unit, clear	

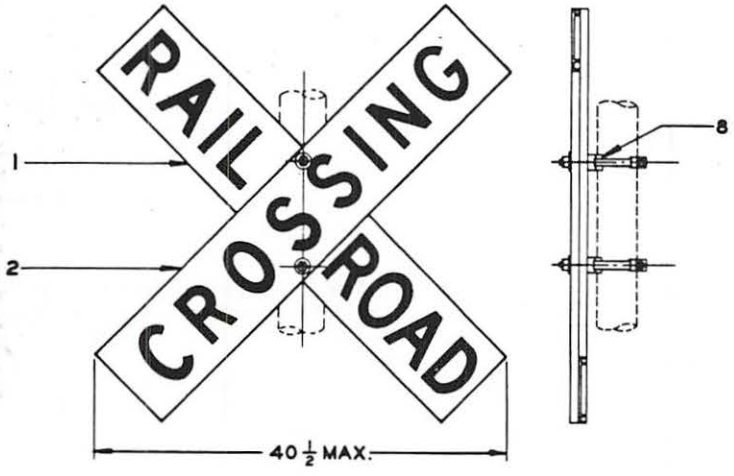
Parts for Type A-479-A
Flashing Light Highway Crossing Signals

"RAILROAD CROSSING" SIGN

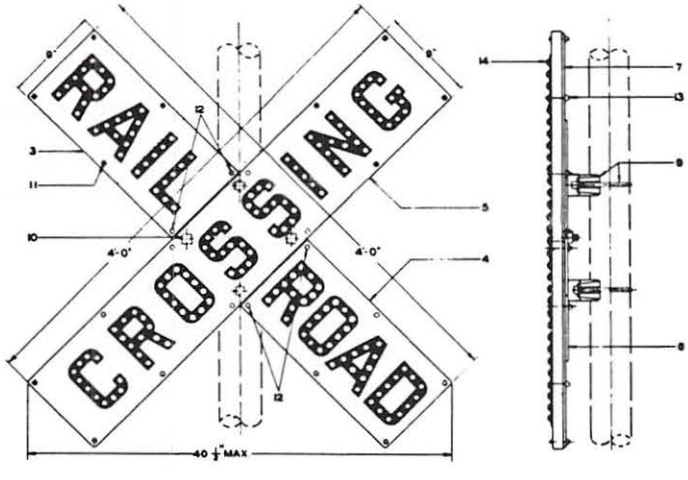
Ref. J



Ref. J1 & J3



Ref. J



Ref. J1 & J3

Parts for Type A-479-A
Flashing Light Highway Crossing Signals

"RAILROAD CROSSING" SIGN

Type 3380 Railroad Crossing Sign, Reflex-Reflecting Sheet Type is on extruded aluminum, with black letters on white reflecting background. Stainless steel strapping is used for mounting the sign on the pole.

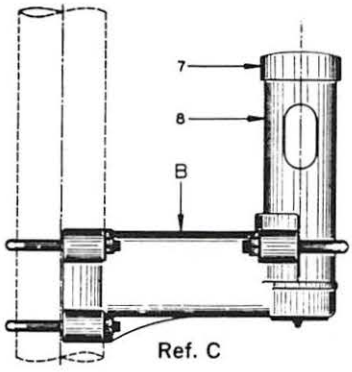
Type 3380 Railroad Crossing Sign, Synthetic baked enamel, embossed steel front plate, with front entrance clear reflector units and telescoping steel back. All the screws and nuts are theft-resisting type. Black letters on white background. Adaptor clamps and "U" bolts are used for mounting the sign on the pole.

The Vitreous Enamel finish sign is the same as the Synthetic, but does not have embossed letters.

Type 3252 Railway Crossing Sign is furnished on extruded aluminum only, with black letters on white reflecting background.

Ref.	Description	Piece No.
J	Type 3380 "Railroad Crossing" Sign, Reflex-Reflecting sheet type on extruded aluminum plate with stainless steel strap kit complete for mounting on 4" or 5" I.D. pipe mast	3380-7
J1	Type 3380 "Railroad Crossing" Sign, Synthetic Baked Enamel finish, with adaptor clamp kit complete for mounting on 4" I.D. pipe mast	3380-4
J2	Same as Ref. J1, but for 5" I.D. pipe mast	3380-4A
J3	Type 3380 "Railroad Crossing" Sign, Vitreous Enamel finish, with adaptor clamp kit complete for mounting on 4" I.D. pipe mast	3380-3
J4	Same as Ref. J3, but for 5" I.D. pipe mast	3380-3A
J5	Type 3252 "Railway Crossing" sign, Reflex-Reflecting sheet type on extruded aluminum plate with stainless steel strap kit complete for mounting on 4" or 5" I.D. pipe mast	3252-7
	REPLACEMENT PARTS	
1	"RAILROAD" Plate, Reflex-Reflecting sheet on extruded aluminum for Ref. J only	3380-710R
1A	Same as Ref. 1, but "RAILWAY" Plate, for Ref. J5 only	3252-710R
2	"CROSSING" Plate, Reflex-Reflecting sheet on extruded aluminum for Ref. J and J5	3380-710C
3	"RAIL" Front Plate, synthetic baked enamel finish, complete with reflector units for Ref. J1 and J2 only	3380-14C
3A	Same as Ref. 3, but vitreous enamel finish	3380-14A
4	"ROAD" Front Plate, synthetic baked enamel finish, complete with reflector units for Ref. J1 and J2 only	3380-15C
4A	Same as Ref. 4 but vitreous enamel finish	3380-15A
5	"CROSSING" Front Plate, synthetic baked enamel finish, complete with reflector units for Ref. J1 and J2	3380-16C
5A	Same as Ref. 5, but vitreous enamel finish	3380-16A
8	Stainless Steel Strap Kit, complete for one sign (specify pipe size)	3364-70
9	U-bolt for 4" I.D. pipe	3364-2
9A	U-bolt for 5" I.D. pipe	3364-5
10	5/8"-11 x 1¼" lg. sq. hd. mach. bolt	
11	3/16"-24 x 1¼" lg. carr. bolt, brass	
12	3/16"-24 x 1½" lg. carr. bolt, brass	
13	3/16"-24 Theft-Proof Nut, brass	3380-27X
14	No. 3F Plastic Reflector units, clear	
15	Key for theftproof nut, steel (not illustrated)	3380-27K

Supporting Brackets
Type 3565-267 and Type 3567-367



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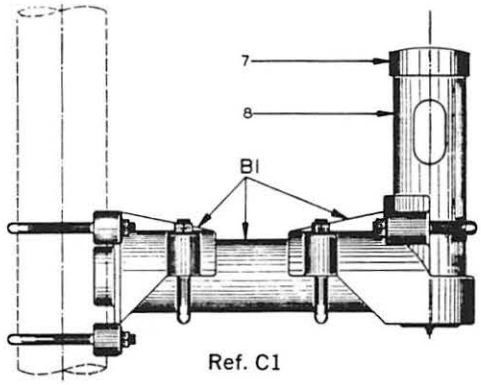
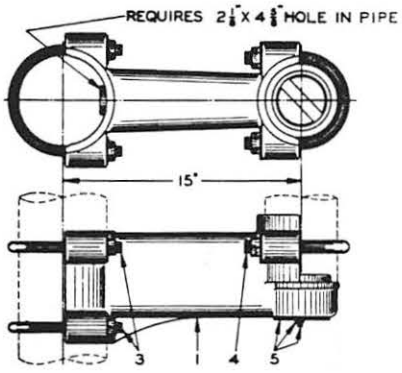
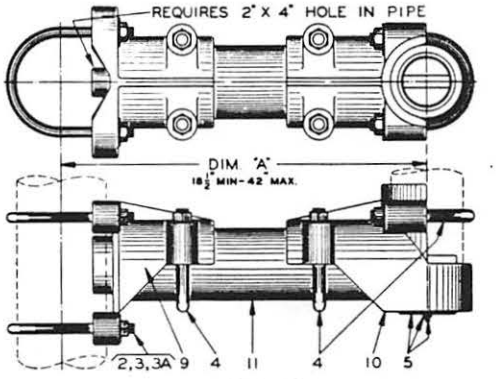


Ref. C1



Ref. B



Ref. B1

For mounting Crossing Signal Light Units, with standard Junctionbox Crossarms, at one side of the mast, as necessitated by obstructions to the view, or for mounting extra light units for warnings along side-roads, etc.

The Type 3565-367 Supporting Bracket is of cast iron, designed for mounting on 5″ mast, and provides a 15″ offset of the dowel mast.

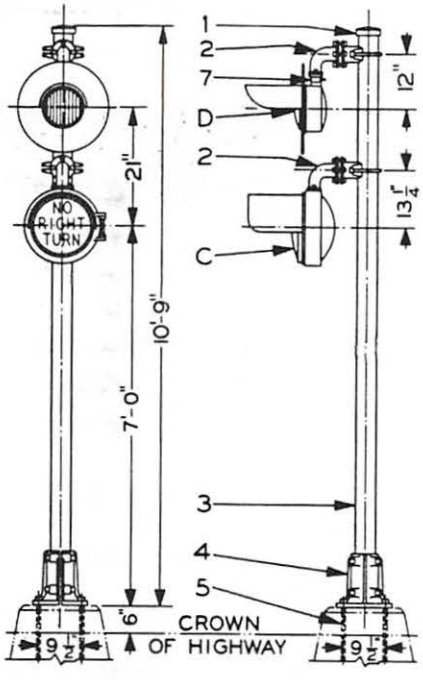
The Type 3565-267 Supporting Bracket consists of castings and a length of 4″ I.D. pipe, which may be varied in length, to provide an offset of the dowel mast, of 18½″, minimum, up to 42″, maximum. The inner bracket, with appropriate "U" Bolts, will fit 4″, 5″ or 6″ I.D. pipe.

Either One-way or Two-way Indication Light Assemblies may be mounted on the dowel masts, which can be turned in the socket to any desired angle.

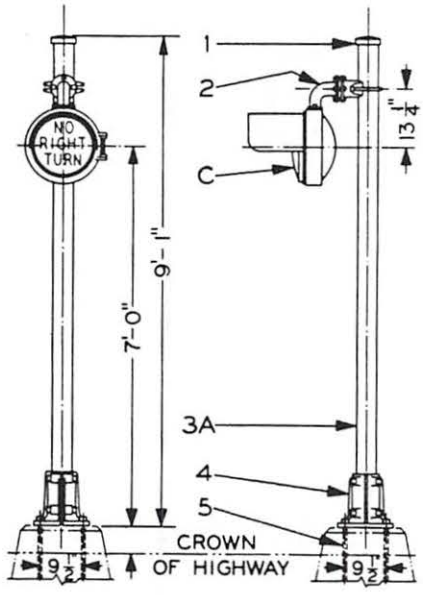
Ref.	Description	Piece No.
B	Supporting Bracket Assembly, Less Dowel Mast	3565A-67
B1	Supporting Bracket Assembly, Less Dowel Mast. (Specify Dimension "A" and diameter of signal mast.)	3565A-167
C	Supporting Bracket and Dowel Mast Assembly	3565A-367
C1	Supporting Bracket and Dowel Mast Assembly. (Specify Dimension "A" and diameter of signal mast)	3565A-267
	REPLACEMENT PARTS	
1	Bracket only	3565-69
2	"U" Bolt, for 4" I.D. Pipe Mast	1264-4
3	"U" Bolt, for 5" I.D. Pipe Mast	1264-5
3a	"U" Bolt, for 6" I.D. Pipe Mast	1264-6
4	"U" Bolt, for 4" I.D. Pipe Extension or Dowel Mast	3565-163
5	Cover and Clamp, for wire opening	3565-162A
7	Pinnacle, for 4" I.D. Pipe	110A-6
8	Dowel Mast, 4" I.D. x 14" long, or length as specified	714-8
9	Inner Support, Casting only	3565A-168
10	Outer Support, Casting only	3565A-166
11	Extension Pipe, 4" I.D. x length as required	

"No Turn" Signals
Type A457 and Type A534

Signals of this type are often used in conjunction with Flashing Light Signals at locations where the use of additional Lights on the signal mast would not provide suitable added protection. Their use is the safest method of protecting street or highway traffic on roadways running parallel to the railroad without interfering with traffic not crossing the tracks.



Ref. A



Ref. B

NOTE:
1 — For ordering references for these signals and components see following page.
2 — For ordering references for replacement parts for Yellow Light Unit see Page 1-17 in this Catalog Section.
3 — Replacement Parts List for NO TURN Sign will be furnished on request.
4 — The No Turn Light Unit will be furnished with other legend, as may be required, stenciled on inner glass.

"No Turn" Signals
Type A457 and Type A534

Ref.	Description	Piece No.
A	"NO LEFT TURN" Signal with Yellow Flashing Light Unit, Pole, Base, Pinnacle and Anchor Bolts	A457L
A1	Same as Ref. A but, "NO RIGHT TURN"	A457R
A2	Same as Ref. A but, "NO TURN"	A457N
B	"NO LEFT TURN" Signal with Pole, Base, Pinnacle and Anchor Bolts	A534L
B1	Same as Ref. B but, "NO RIGHT TURN"	A534R
B2	Same as Ref. B but, "NO TURN"	A534N
C	"NO LEFT TURN" Sign with Adaptor Bracket and "U" Bolt	939-1L
C1	Same as Ref. C but, "NO RIGHT TURN"	939-1R
C2	Same as Ref. C but, "NO TURN"	939-1N
C3	"NO LEFT TURN" Sign, only, (without Bracket and "U" Bolt)	939-1LX
C4	Same as Ref. C3 but, "NO RIGHT TURN"	939-1RX
C5	Same as Ref. C3 but, "NO TURN"	939-1NX
D	Yellow Flashing Light Unit, with Adaptor Bracket and "U" Bolt	970-501Y
D1	Same as Ref. D but, without Bracket and "U" Bolt	970-201Y
	REPLACEMENT PARTS	
1	Pinnacle, for 4" I.D. Pipe Mast	110A-6
2	Adaptor Bracket with "U" Bolt, nuts and washers	939-51
3	Pipe Mast, 4" I.D. x 10'8" long, for A457 signal	714-21-3
3A	Pipe Mast, 4" I.D. x 9'0" long, for A534 sign	714-20-2
4	Split Base, for 4" I.D. Pipe Mast	14492A
5	Anchor Bolt, 1" x 24" long, with Hexagon Nut and Washer	11079-1
6	Transparent Outer Cover	221718
7	Adaptor for mounting Type 970-201Y Light Unit on Ref. 2	950-72B

NOTE:

1 — 10 Volt, 25 Watt, Single Contact, Bayonet Base, Electric Lamps, S-11 Bulb, having light center length of 1¼", are recommended for the NO TURN signs, but are not furnished unless specified on order.

2 — No Turn Sign and Yellow Flashing Light Unit mounting Brackets are furnished with "U" Bolts for 4" Pipe Mast, unless otherwise specified.

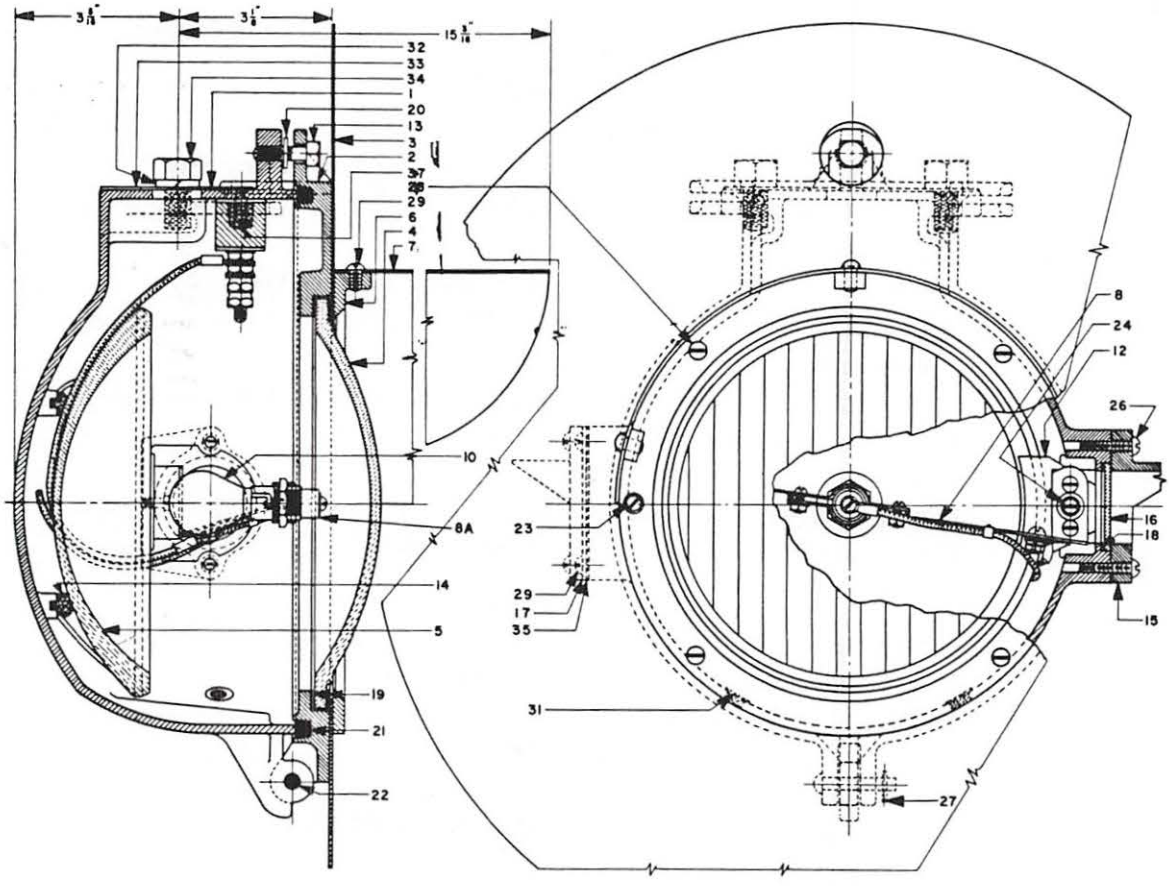
REPLACEMENT PARTS ONLY
(Manufacture Discontinued)

Type 950A-201 Crossing Signal Light Unit

(Single Contact, Bayonet Base, Receptacle)

All Castings in the Type 950A-201 Light Unit are Aluminum. Replacement parts of cast aluminum will be furnished. Aluminum and cast iron parts are physically interchangeable.

Sheet Aluminum Hoods and Backgrounds will be furnished on all orders.



NOTE:
1 — For ordering references for replacement parts for this Light Unit see following page.
2 — For ordering references for replacement parts for the Older Style, Type 950-1, Light Unit see Plate D370 in Old Catalog Section D, Part No. 2.

REPLACEMENT PARTS ONLY
(Manufacture Discontinued)

Type 950A-201 Crossing Signal Light Unit

(Single Contact, Bayonet Base, Receptacle)

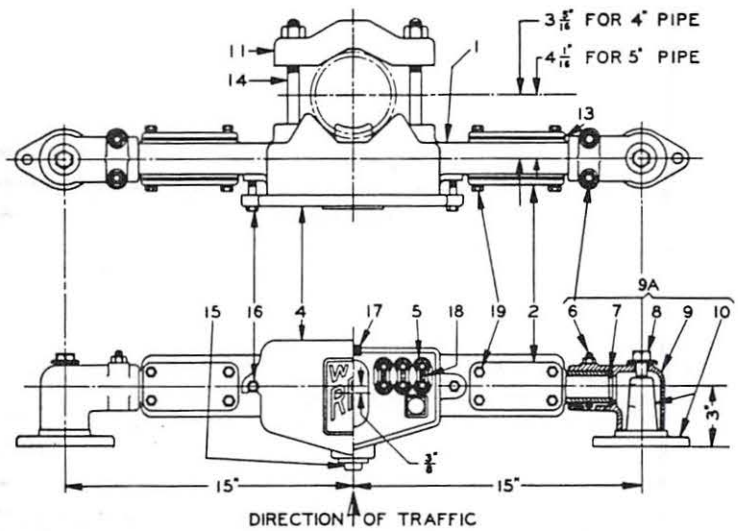
Ref.	Description	Piece No.
3	Background	950-13A
4	Roundel, (See listing Page 1-3)	
5	Mangin Mirror Reflector	822
6	Roundel Retaining Ring	802-1A
7	Hood	823-1A
8	Lamp Bracket and Receptacle, sub-assembly	950-250A
8a	Lamp Receptacle and Adjusting Nut, only	950-255
10	Single Contact, Bayonet Base Lamp, (Specify Voltage and Wattage)	
12	Reflector Retaining Plate	880-211
13	Cap Screw, 5/16" x 7/8" long, Hexagon Head, Steel	
13a	Cap Screw and Retaining Washer Assembly	950-270R
14	Reflector Pad	880-15
15	Side Light Hood	880A-23
16	Side Light Glass Disc	811
17	Side Light Blank Cover	801-3
18	Side Light Gasket	818-48
19	Roundel Gasket	825
20	Retaining Washer	950-270
21	Packing, for cover	880-18
22	Hinge Pin and Cotter	950-259A
23	Machine Screw, No. 10-32 x 1/2" long, Fillister Head, Brass	
24	Machine Screw, No. 10-32 x 3/8" long, Fillister Head, Brass	
25	Machine Screw, No. 10-32 x 5/8" long, Round Head, Brass	
26	Machine Screw, 1/4"-20 x 3/4" long, Round Head, Brass	
27	Cotter Pin, 3/32" x 5/8" long, Steel	
29	Machine Screw, 1/4"-20 x 3/8" long, Round Head, Brass	
31	Ventilator	818-49
32	Lock Washer, 1/2", Steel	
33	Gasket	950-17
34	Cap Screw, 1/2"-13 x 1 1/4", Hexagon Head, Steel	
35	Gasket	801-2

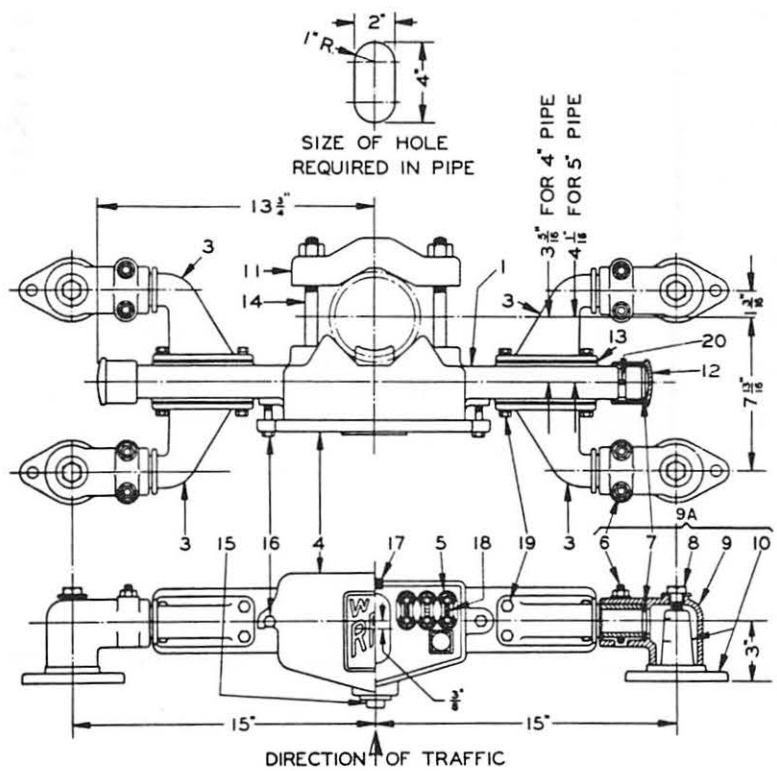
REPLACEMENT PARTS ONLY

(Manufacture Discontinued)

Junction Box Cross Arm For Mounting Type 950A-201 Crossing Signal Light Units

All castings in the Type 950A Junctionbox Crossarms are Aluminum. Replacement parts of cast aluminum will be furnished unless cast iron is specified. Aluminum and cast iron parts are physically interchangeable.





NOTE:

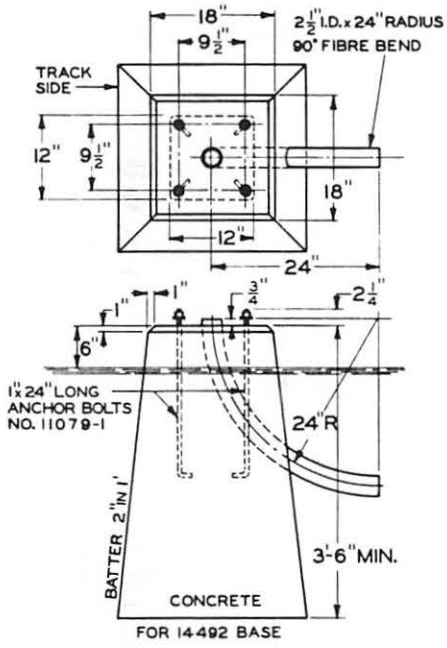
1 — For ordering references for replacement parts for these Junctionbox Crossarms see following page.

REPLACEMENT PARTS ONLY
(Manufacture Discontinued)

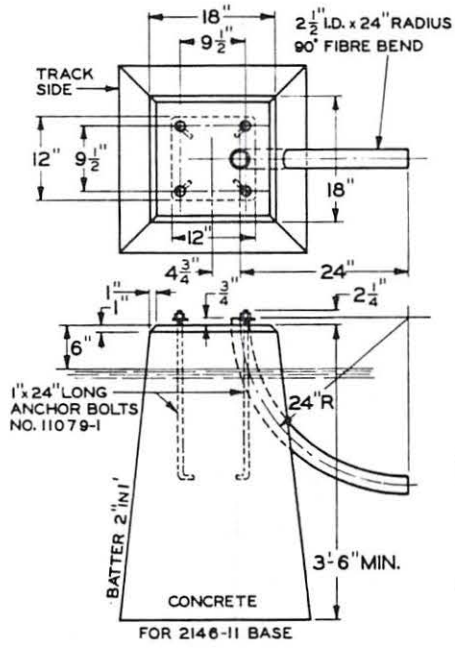
Junction Box Cross Arm For Mounting Type 950A-201 Crossing Signal Light Units

Ref.	Description	Piece No.
1a	Junction box, subassembly of references 1, 4, 5, 15, 17, and 18	950A-62
2	Cover Plate	950A-39
3	Bracket, 3½" extension	950A-57
4	Cover, with packing	950A-21
5	Terminal Block, complete, 6 binding posts	2506-106
6	"U" Bolt, complete with nuts	950-31
7	Gasket, sponge rubber	950-28
8	Bolt, complete with cupped washer	950-33
9	Supporting Bracket, casting only	950A-30
9a	Supporting Bracket, sub-assembly of references 6 to 10 inc	950A-63
10	Light Unit Support	950A-32
11	Adaptor Clamp	950A-34
12	End Cap, with set screw and gasket	950A-29A
13	Gasket, cork	950-27
14	Machine Bolt, with hexagon nut, ⅝"-11 x 6" long, for mounting junctionbox crossarm on 4" I.D. Pipe	
14a	Machine Bolt, with hexagon nut, ⅝"-11 x 7½" long, for mounting junction-box crossarm on 5" I.D. Pipe	
14b	Machine Bolt, with hexagon nut, ⅝"-11, curved, for mounting junctionbox crossarm on 6" I.D. Pipe	3364-37
14c	Machine Bolt, with hexagon nut, ⅝"-11, curved, for mounting junctionbox crossarm on 8" I.D. Pipe	3364-35
15	Pipe Plug, 1¼"	
16	Cap Screw, ⅜"-16 x 2" long, Hexagon Head, Steel	
17	Torchwick Packing, ⅜" diameter, 27" long	
18	Machine Screw No. 10-32 x ⅝" long, Fillister Head, Brass	
19	Cap Screw, ⅜"-16 x ⅞" long, Hexagon Head. steel, with plain washer	
20	Set Screw, ¼"-20 x ½" long, Square Head, Cup Point	

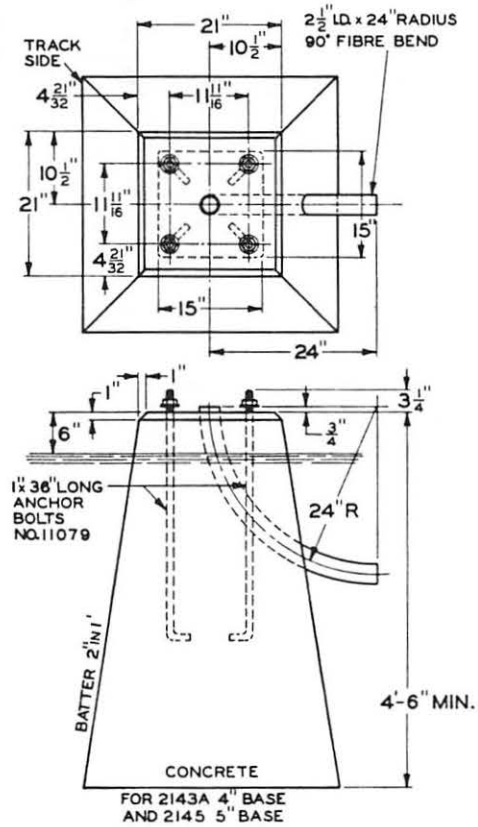
Suggested Designs for Concrete Foundations For Flashing Light Highway Crossing Signals



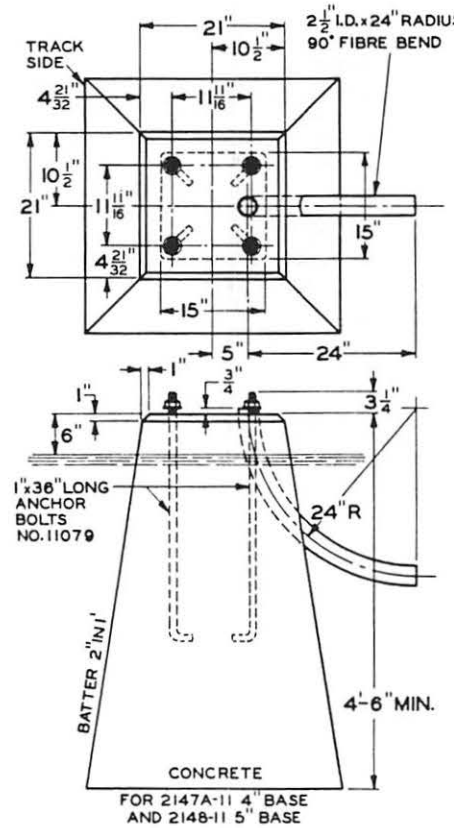
FOR 14492 BASE



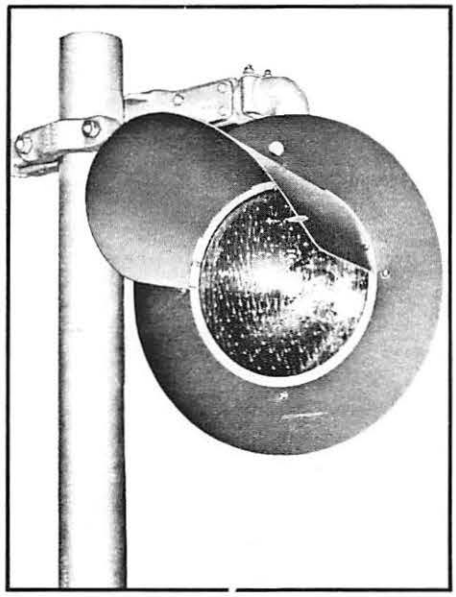
FOR 2146-11 BASE



FOR 2143A 4" BASE AND 2145 5" BASE



FOR 2147A-11 4" BASE AND 2148-11 5" BASE



TYPE A-479A 12" FLASHING LIGHT HIGHWAY CROSSING SIGNAL with TYPE 975-201 LIGHT UNITS

GENERAL INFORMATION

Latest Improvements, Meet A.A.R. Specifications
The Flashing Light Highway Crossing Signals manufactured by Western-Cullen-Hayes represent the latest improvements in design. They meet all A.A.R. Specifications.

Arrangements To Suit Your Needs

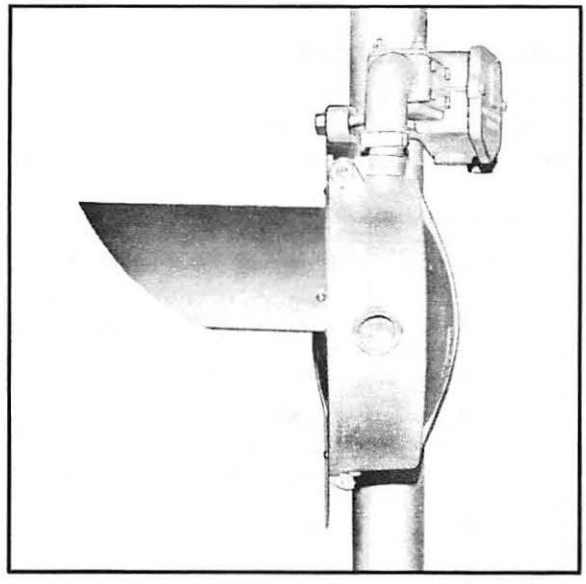
This catalog illustrates the most popular arrangements of Flashing Light Signals and accessories, such as junction box-crossarm with two or four flashing light units for one-way or two-way indication. Other arrangements can be furnished to meet particular requirements.

Popular Arrangements

By far, the majority of Flashing Light type highway crossing signal installations require two flashing light signals, with two-way indication; one with a bell and one with a pinnacle. W-C-H's A-479A all aluminum assembly with 9½" x 9½" or 11 1/16" x 11 1/16" anchor bolt spacings and reflex-reflecting sheet type signs, will meet most requirements. The Type 0333 Bell is usually required. Plastic roundels having 20° horizontal spread and 10° downward deflection are furnished as standard. For other roundels see page 1-55.

Extra Indication Assemblies

Many locations require flashing light highway crossing signals with extra light assemblies to provide extra indication. Generally these lights are mounted 90 degrees to the right of and above the main lights as illustrated in references C, C1 and D on page 1-53. The extra lights may be mounted at any angle which may be specified. If "Stop On Red Signal" or number of tracks sign is required, it must be specified.



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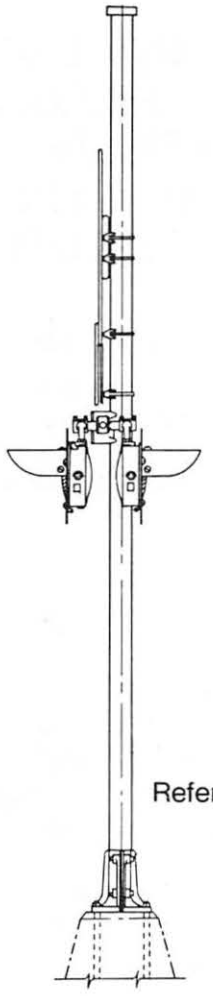
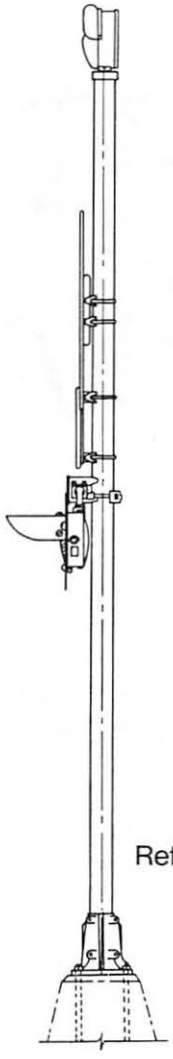
TYPE A-479A 12" FLASHING LIGHT HIGHWAY CROSSING SIGNAL with TYPE 975-201 LIGHT UNITS

Popular Arrangements

Reference A



Reference A1



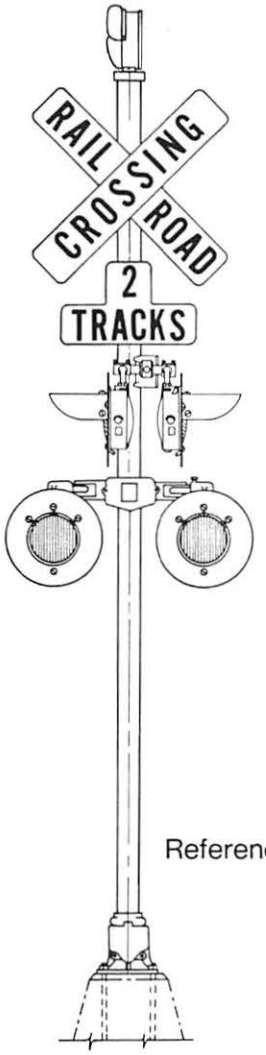
Reference B

ORDERING REFERENCES

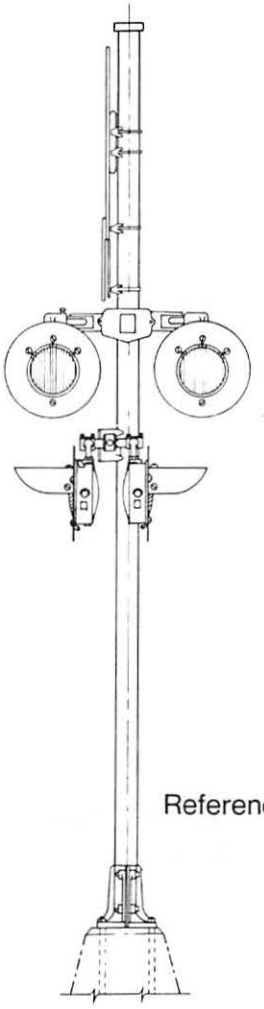
Listed below are ordering references for assemblies shown above. Refer to catalog pages 1-10 thru 1-13 for details of mast and base components, pages 1-20 thru 1-25 for details of various signs and sign mounting kits and page 1-27 for support brackets.

Reference	Description	Piece No.
A	Flashing Light Highway Crossing Signal complete; two-way indication, with 0333 Bell. (Specify voltage and wattage of lamp bulbs, if required, and mast and base sizes)	A479AB
A1	Same as Ref. A, but with pinnacle in place of bell.	A479AP
B	Flashing Light Highway Crossing Signal complete; one-way indication, with 0333 Bell. (Specify voltage and wattage of lamp bulbs, if required, and mast and base sizes)	A479AB-1
B1	Same as Ref. B, but with pinnacle in place of bell. (Not shown)	A479AP-1

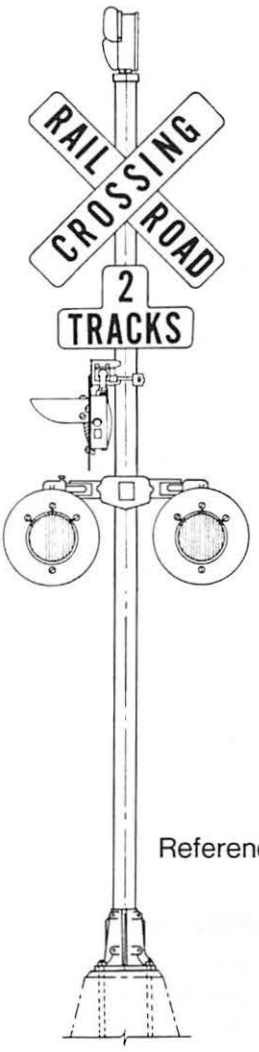
Extra Indication Assemblies



Reference C



Reference C1



Reference D

ORDERING REFERENCES

Listed below are ordering references for assemblies shown above. Refer to catalog pages 1-10 thru 1-13 for details of mast and base components, pages 1-20 thru 1-25 for details of various signs and sign mounting kits and page 1-27 for support brackets.

Reference	Description	Piece No.
C	Flashing Light Highway Crossing Signal complete; two-way indication main lights, two-way indication extra lights mounted 90° to the right and 0333 Bell. (Specify voltage and wattage of lamp bulbs, and mast and base sizes)	A479AB-8
C1	Same as Ref. A, but with pinnacle in place of bell.	A479AP-8
D	Flashing Light Highway Crossing Signal complete; two-way indication main lights, with one-way indication extra lights mounted 90° to the right and 0333 Bell. (Specify voltage and wattage of lamp bulbs, and mast and base sizes)	A479AB-6
D1	Same as Ref. B, but with pinnacle in place of bell. (Not shown)	A479AP-6

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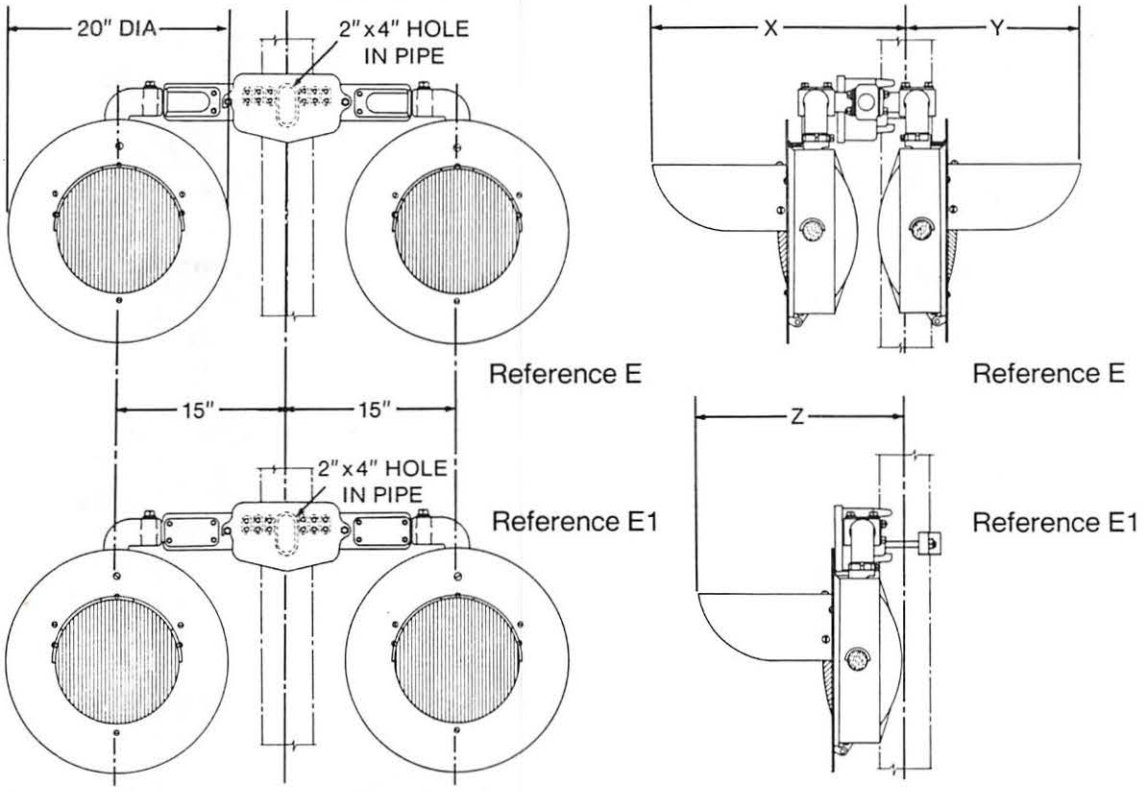
PARTS for TYPE A-479A 12" FLASHING LIGHT HIGHWAY CROSSING SIGNAL with TYPE 960 CROSSARM AND TYPE 975-201 LIGHT UNITS

TYPE 975-204-REFERENCE E
Flashing Light Signal—Two Way Indication



TYPE 975-202-REFERENCE E1
Flashing Light Signal—One Way Indication

SPECIFICATIONS

Cast Aluminum Crossarm, Brackets, Elbows and Light Units. Sheet Aluminum Backgrounds and Hoods. Type 975-201 Light Units are equipped with Parabolic Glass Reflectors, 12" diameter Red Roundels and Single Contact-Bayonet base receptacles positioned to accommodate S-8 or S-11 lamp bulb, having 1¼" light center length. See pages 1-18 and 1-19 for Crossarm component detail.

ORDERING REFERENCES

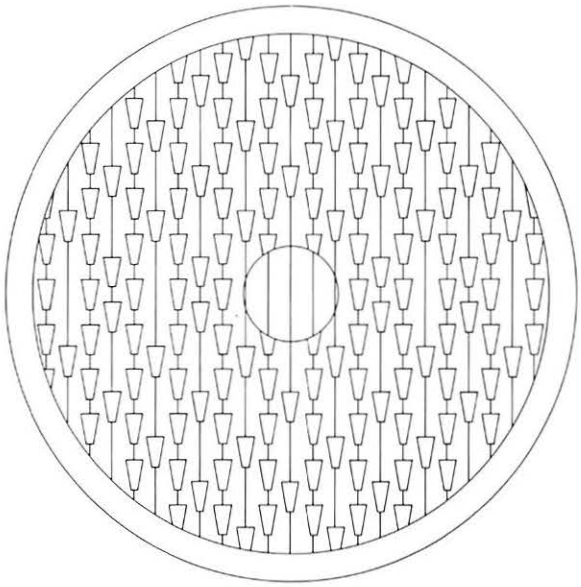
Reference	Description	Piece No.
E	Type 975 Flashing Light Unit Assembly with Type 960 Junction Box Crossarm For Two-Way indication with 4 Light Units. (Specify I.D. of pipe and roundels)	**975-204**
E1	Same as Ref. E, but one-way indication with 2 light units	**975-202**
E2	Type 975 Light Unit Only	**975-201**
E3	Type 960 Junction Box Crossarm for two-way indication. (Specify I.D. of pipe)	**960-5**
E4	Same as Ref. E3, but for one-way indication	**960-3**

SPECIFICATION TABLE FOR I.D. OF PIPE

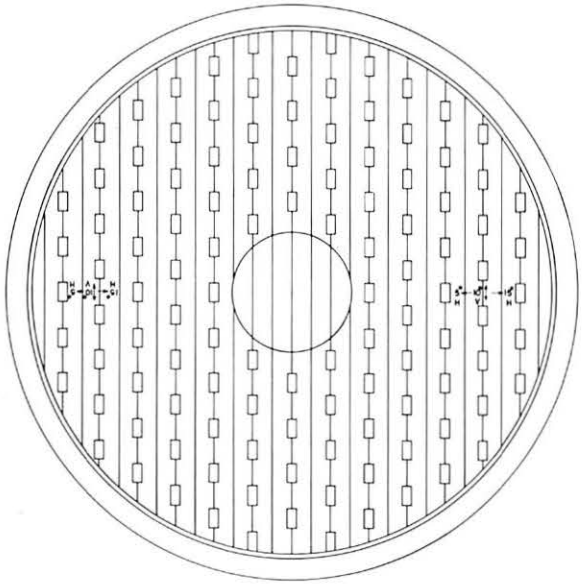
Pipe Size	Dim. X	Dim. Y	Dim. Z
4" I.D.	27½"	21¼"	23"
5" I.D.	28¼"	20½"	24"
6" I.D.	28"	20"	24½"
8" I.D.	30¼"	18½"	25½"

ROUNDELS

Roundels furnished comply with appropriate sections of A.A.R. Signal Manual Parts 136 and 166. They are 12" diameter, red, with color meeting requirements of A.A.R. Signal Manual, Section 136. Type 5358 are recommended for general use.



5368



5358

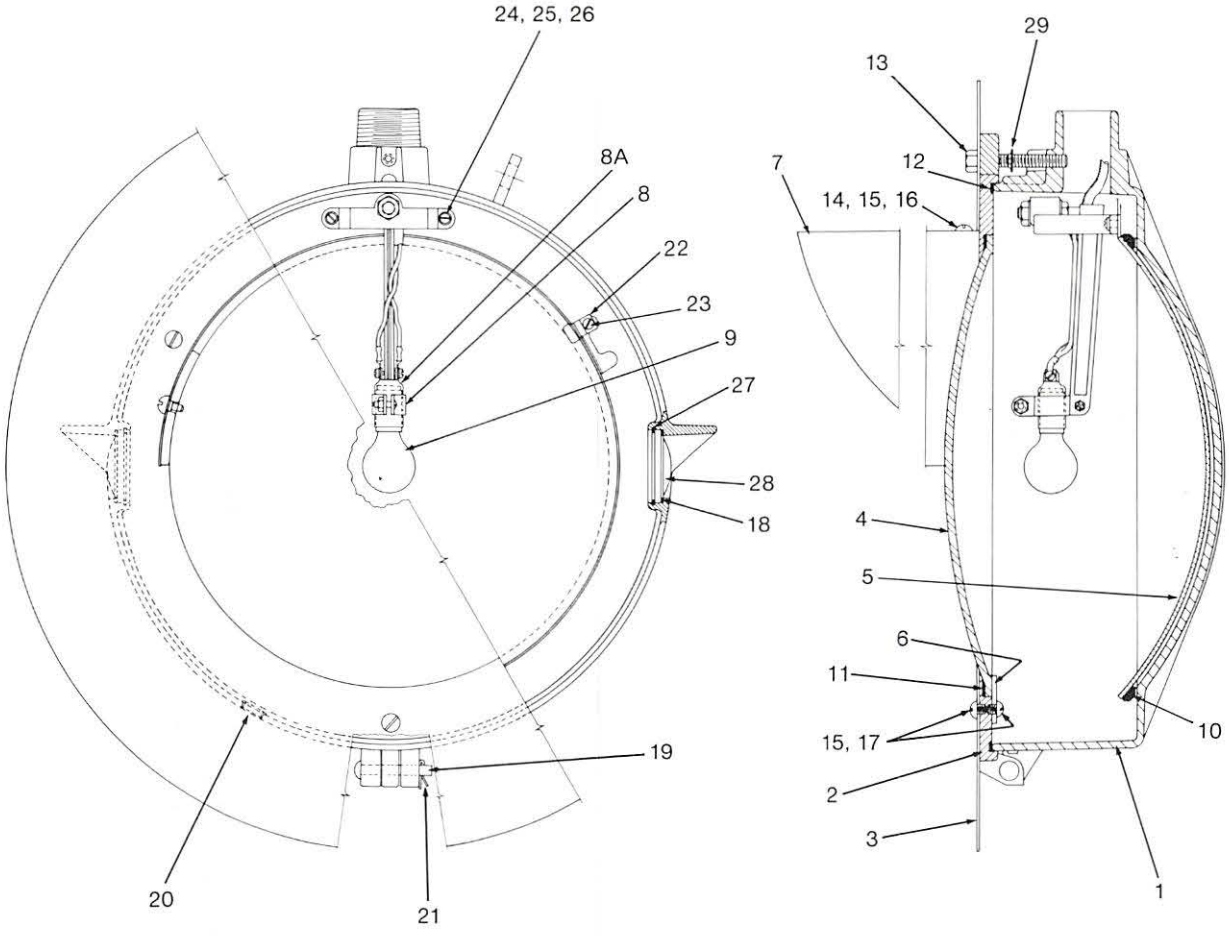
SPECIFICATIONS

All 12" type roundels are made of high strength, impact resistant polycarbonate plastic.

ORDERING REFERENCES

Reference	Description	Piece No.
1	Type 5358 Roundel, 20 degree horizontal spread 10 degree down deflection, 2" Hot Spot	**5358**
2	Type 5368 Roundel, 20 degree horizontal spread 32 degree down deflection, 2" Hot Spot	**5368**
3	Type 5359 Roundel, 70 degree spread	**5359**
4	Type 5369 Roundel, 30 degree horizontal spread 15 degree down deflection	**5369**

PARTS for TYPE A-479A
12″ FLASHING LIGHT HIGHWAY CROSSING SIGNAL
with TYPE 975-201 LIGHT UNITS



SPECIFICATIONS—12″ FLASHING LIGHT UNIT

All castings in the Type 975-201 Light Unit are aluminum, with sheet aluminum hood and background. All light units are finished in black.

ORDERING REFERENCES

Reference	Description	Piece No.
A	Type 975 Flashing Light Unit assembly, specify roundel desired and voltage and wattage of lamp, if required	975-201
	REPLACEMENT PARTS	
1	Case	975-1
2	Cover	975-2
3	Background	975-13
4	Roundel (See Page 1-55)	
5	Reflector	975-275C
6	Roundel Retainer	975-24
7	Hood	975-9
8	Lamp Bracket and Socket sub-assembly	975-20A
8A	Lamp Receptacle with insulating sleeve	
9	Electric Lamp (Specify voltage and wattage)	
10	Reflector Supporting Ring	975-16
11	Roundel Gasket	975-825
12	Door Packing	975-18
13	5/16" x 2¼" lg. Hex Hd. Cap Screw Stainless steel	
14	¼" x 20 x ½" lg. Rd. Hd. Mach. Screw	
15	¼" Internal Tooth Lock Washer	
16	¼"-20 Sq. Nut, brass	
17	¼"-20 x ¼" lg. Rd. Hd. Mach. Screw, brass	
18	Side Light Gasket	960-48
19	Hinge Pin	975-259
20	Ventilator	1265-6
21	3/32" x 5/8" lg. Cotter Pin	
22	Reflector Holding Clip	970-17
23	No. 8-32 x 3/8" lg. Rd. Mach. Screw	
24	No. 10-24 x ¾" lg. Rd. Hd. Mach. Screw	
25	No. 10 Plain Washer	
26	No. 10 Spring Lock Washer	
27	Retaining Ring	960-7S
28	Side Light Glass Disc	811
28A	Side Light Blank Plate	950A-261
29	Crescent Retainer	970-39

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632

NOTES

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632 • Telephone: 312/254-9600 • Telex 25-3206

FAX # 312-254-1110

TO: Union Switch & Signal
Jim Joyce
412-369-2589

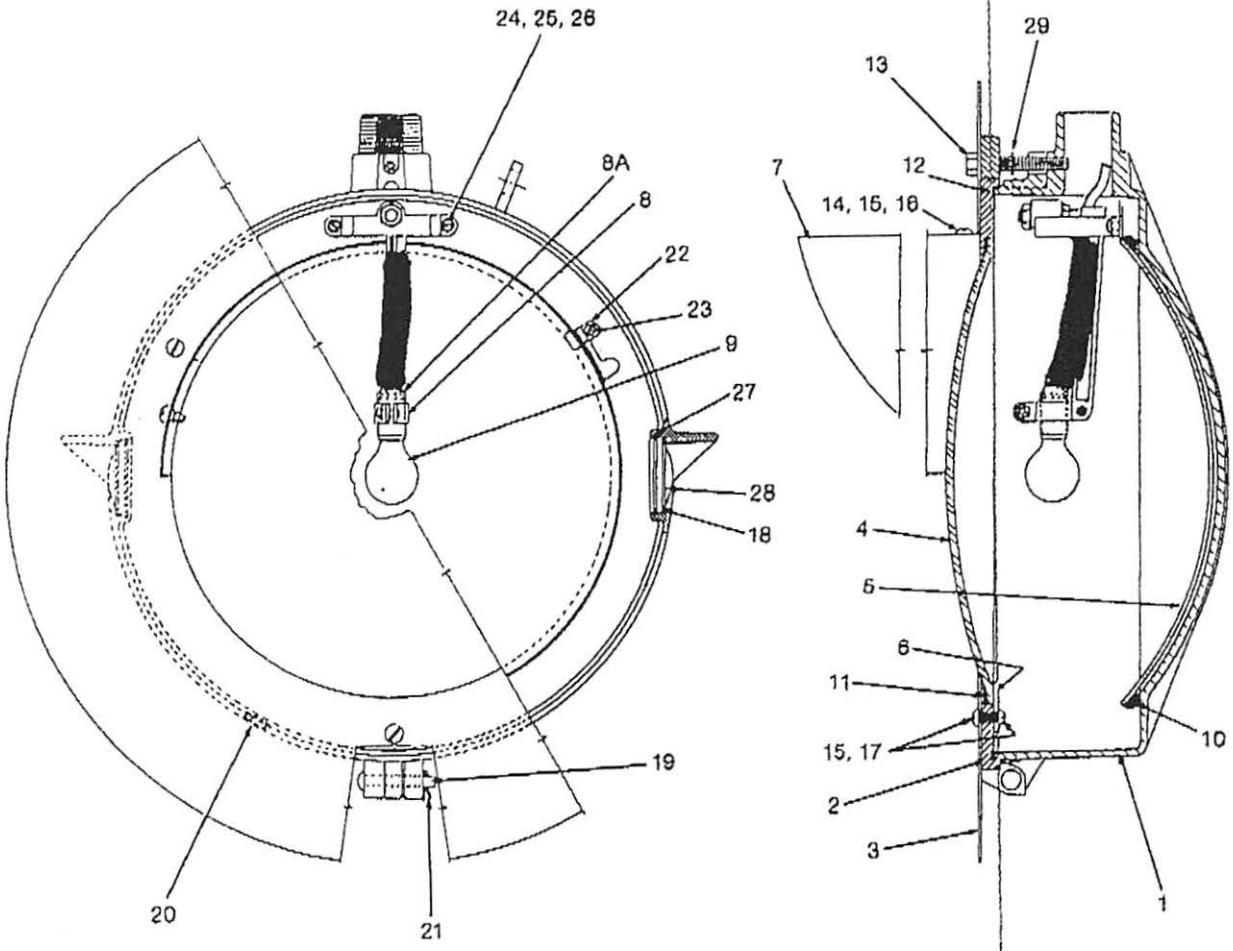
DATE: 4-22-94
FROM: Brian Crain
REF:

NUMBER OF PAGES, INCLUDING TRANSMITTAL SHEET: 4

PG 1-56, BRACKET IS DIFFERNT IN 975-206. REFLECTOR IS DIFFERNT, PN CHANGES. WERE MADE ON 1-57. ORIGNAL MAILED 4-15-94

APR-22-1994 15:38 FROM WESTERN CULLEN HAYES TO 14123692589 P.01

PARTS for TYPE A-479A
12" FLASHING LIGHT HIGHWAY CROSSING SIGNAL
with TYPE 975 LIGHT UNITS



SPECIFICATIONS – 12" FLASHING LIGHT UNIT

All castings in the Type 975 " Light Unit are aluminum, with sheet aluminum hood and background.

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ORDERING REFERENCES

Reference	Description	Piece No.
A	Type 975 Flashing Light Unit assembly, specify roundel desired and voltage and wattage of lamp, if required	975-206
	REPLACEMENT PARTS	
1	Case	975-1
2	Cover	975-2
3	Background	975-13
4	Roundel (See Page 1-55)	
5	Reflector	975-277
6	Roundel Retainer	975-24
7	Hood	975-9
8	Lamp Bracket and Socket sub-assembly	975-20A
8A	Lamp Receptacle with insulating sleeve	
9	Electric Lamp (Specify voltage and wattage)	
10	Reflector Supporting Ring	975-16
11	Roundel Gasket	975-825
12	Door Packing	975-18
13	5/16" x 2¼" lg. Hex Hd. Cap Screw Stainless steel	
14	¼" x 20 x ½" lg. Rd. Hd. Mach. Screw	
15	¼" Internal Tooth Lock Washer	
16	¼"-20 Sq. Nut, brass	
17	¼"-20 x ¼" lg. Rd. Hd. Mach. Screw, brass	
18	Side Light Gasket	960-48
19	Hinge Pin	975-259
20	Ventilator	1265-6
21	3/32" x 5/8" lg. Cotter Pin	
22	Reflector Holding Clip	970-17
23	No. 8-32 x 3/8" lg. Rd. Mach. Screw	
24	No. 10-24 x ¾" lg. Rd. Hd. Mach. Screw	
25	No. 10 Plain Washer	
26	No. 10 Spring Lock Washer	
27	Retaining Ring	960-7S
28	Side Light Glass Disc	811
28A	Side Light Blank Plate	950A-261
29	Crescent Retainer	970-39

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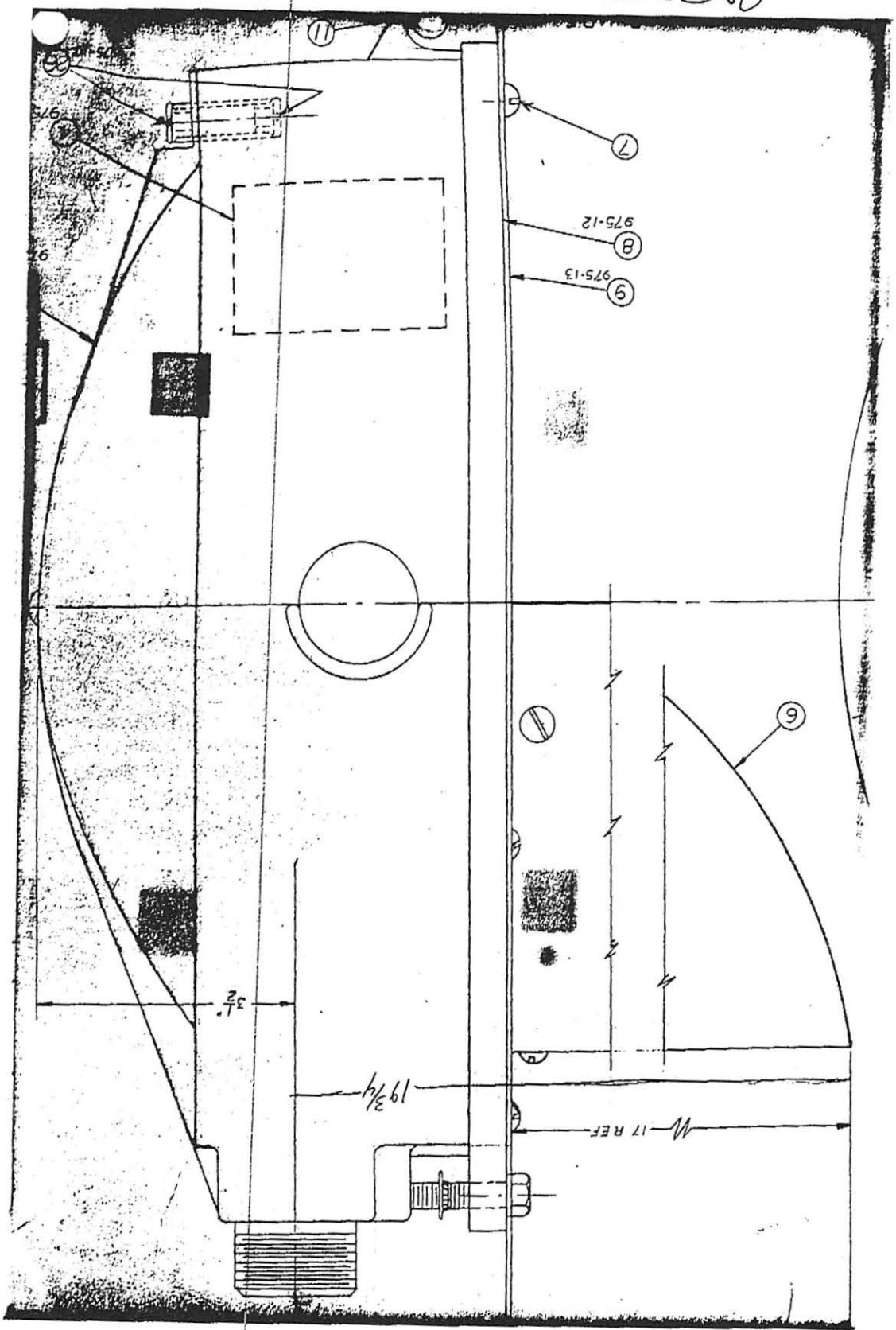
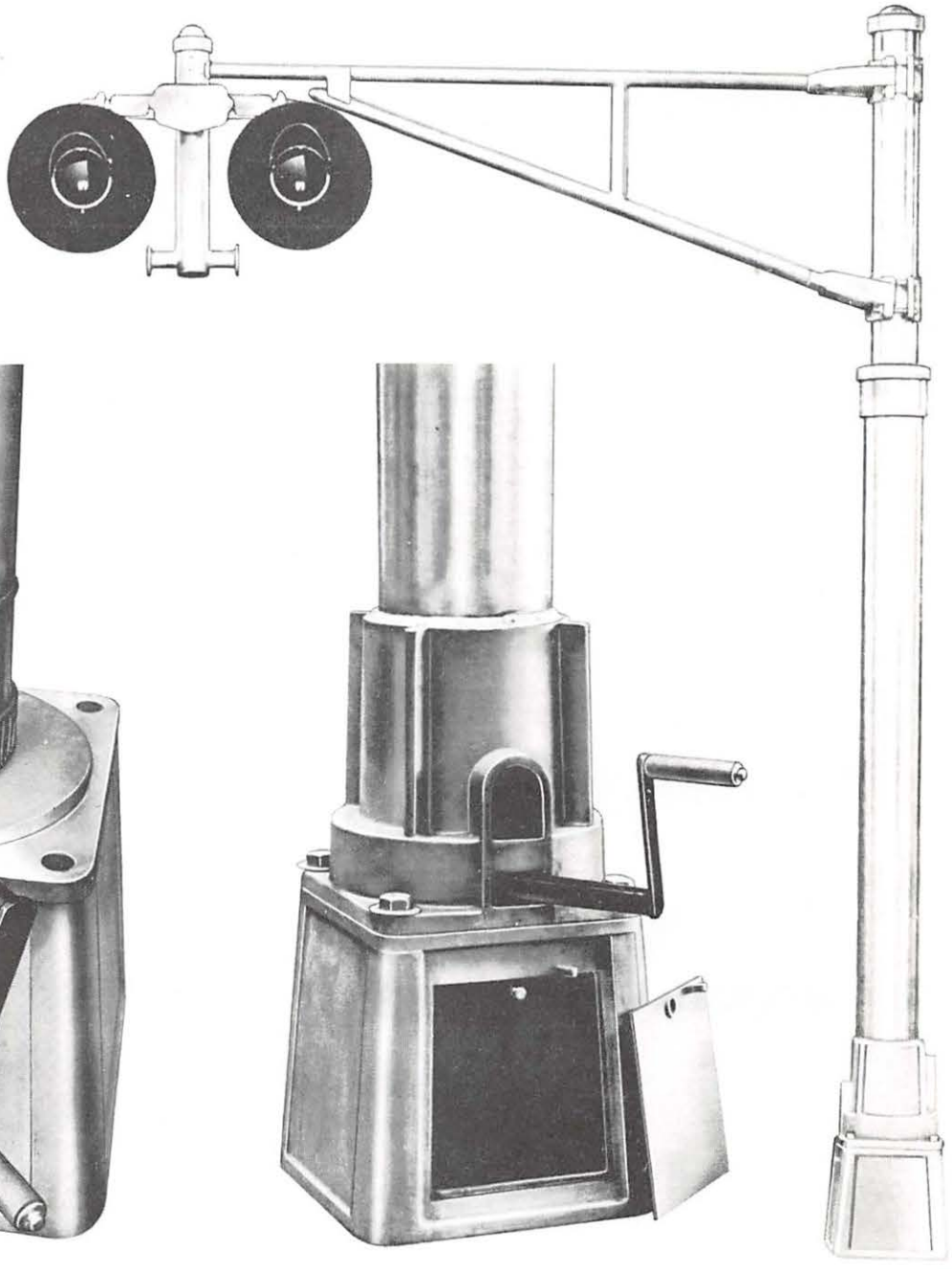
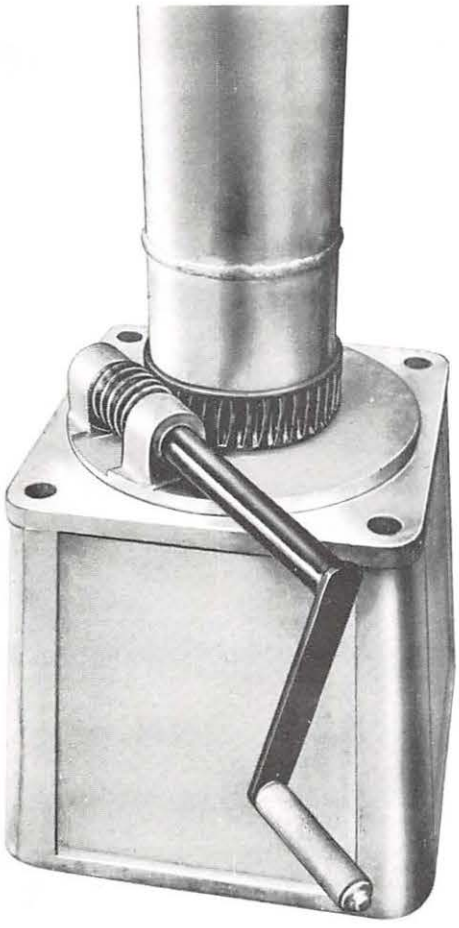
975-206



TYPE A 760

ALUMINUM
ROTATABLE CANTILEVER SIGNAL





WC Hayes

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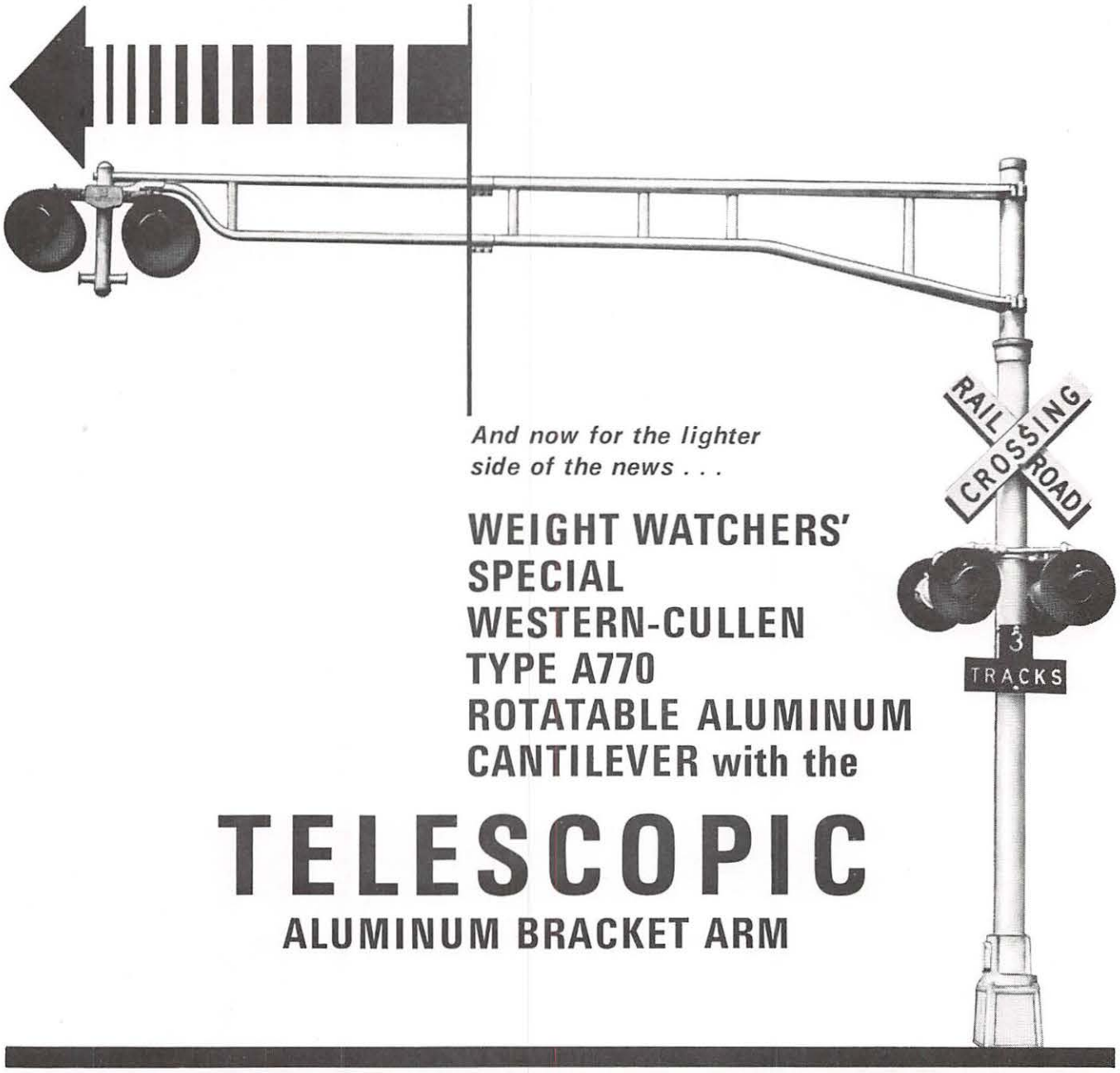
2700 West 36th Place • Chicago, Illinois 60632 • Telephone: 312/254-9600 • Telex 25-3206



And now for the lighter side of the news . . .

WEIGHT WATCHERS' SPECIAL WESTERN-CULLEN TYPE A770 ROTATABLE ALUMINUM CANTILEVER with the

TELESCOPIC

ALUMINUM BRACKET ARM

Now a welcome addition to our Western-Cullen line of rotatable aluminum cantilevers to give you a wider choice of bracket arms!

Besides our current Cantilever Type A760, with the standard bracket arm (available in 12, 15 or 20 foot widths), we now have available Cantilever Type A770, with extendable bracket arm (adjustable to any length between 15 and 20 feet).

The bracket arm width is the only difference. Otherwise, both units have the same time-saving, ease of service features which include: release and turn of bracket arm to and fro off-highway position from gears at base; automatic, positive locking of bracket arm in fixed position for servicing, and many other features.*

These two Cantilever units—the Type A760 and the Type A770—give you a choice among the choice!

**Aluminum hook-on ladder available.*

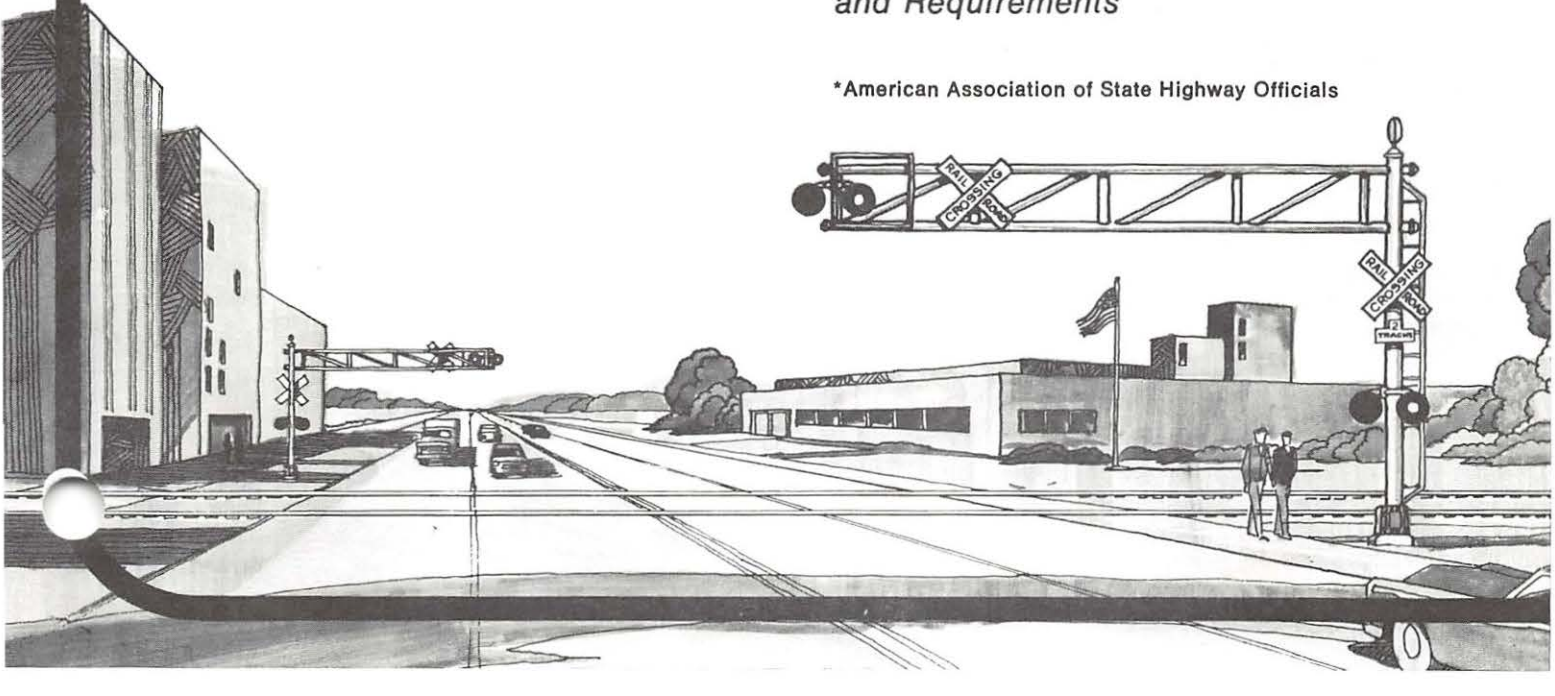
WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632 • Telephone: 312/254-9600 • Telex 25-3206

WC STATIONARY (WALKOUT) CANTILEVERS

- Provides Significant Improvement in SIGNAL VISIBILITY AT GRADE CROSSINGS
- Signal maintenance is safer, easier, faster
- 2 types available, adjustable or fixed length arm
- Custom designs available

Meets AAR and AASHO Standards and Requirements*

*American Association of State Highway Officials



WC

Stationary (*Walkout*) Cantilevers improve grade crossing protection

- Flashing lights can be placed above traffic in direct view of the motorist
- 17 foot road clearance above top of foundation
- Railroad personnel can maintain equipment safely—without obstructing highway traffic. Special vehicles are not required.
- Minimum maintenance is required

Western-Cullen's Stationary Cantilevers are designed to meet the Standards of the American Association of State Highway Officials (AASHO) and exceed AAR requirements. These rugged cantilevers can withstand 100 mile per hour winds with gusts up to 130 MPH, ice loadings to 3 pounds per square foot and live loads of 500 pounds at the tip. All aluminum framing members are of 6061-T6 which is 25% stronger than materials normally used in railroad cantilevers.

Split base and junction box bases are of 356-T6 aluminum, the only type of alloy approved by AASHO. All welding is done by certified welders in accordance with ASME Boiler and Pressure Vessel Code, Section IX, Part B. Bolt spacing: 11-11/16″ x 11-11/16″. Anchor bolts: 1¼″ x 72″.

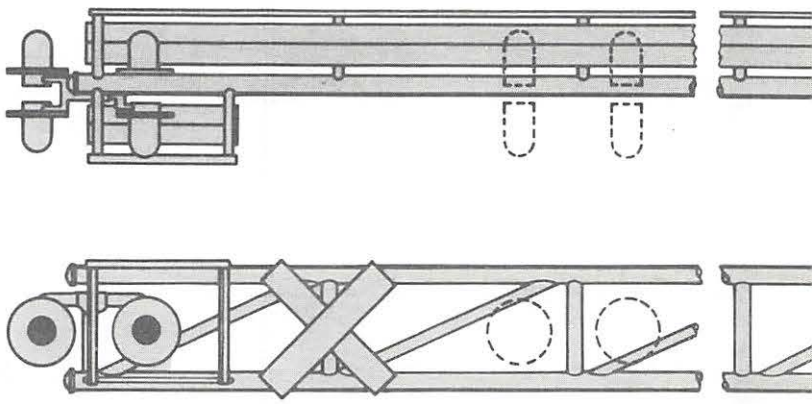
Service of equipment can be done quickly by railroad personnel working safely above the traffic. There is no need to tie up highways or employ specially equipped vehicles. Walkway arms and working platforms on cantilevers have non-slip safety grating to assure safe footing under adverse weather conditions. Where severe icing occurs frequently Grip Strut® safety grating can be provided. Hand rail and grab irons are included for added safety. Anti-climb guards are provided to prevent vandals from climbing the cantilever.

Single mast construction is used with arm lengths 8′ to 31′; double masts are used for 32′ to 40′ arms. Double mast spacing: 3′-0″.

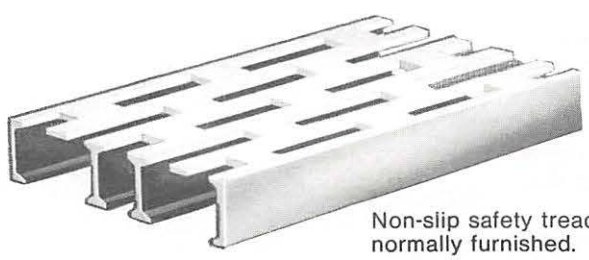
Use of Western-Cullen's stationary cantilever provides improved locations for flashing light, directly in front of oncoming traffic. Highway safety and railroad safety is improved.

® Trade Mark U.S. Gypsum Co.

Fixed length Walkout Cantilever

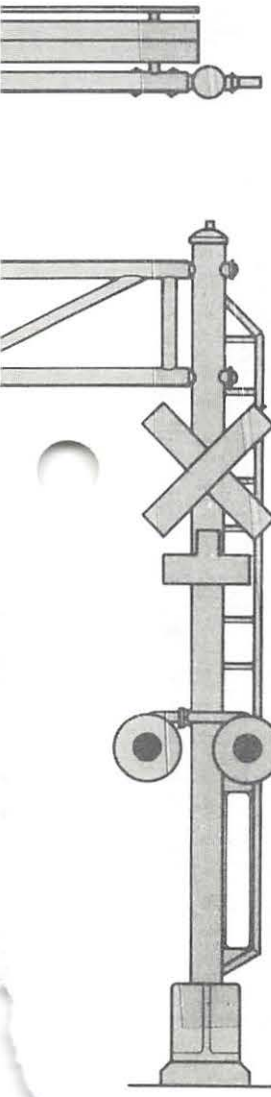


- Lower cost
- Welded construction
- Available in 1 ft. increments from 8 to 40 feet

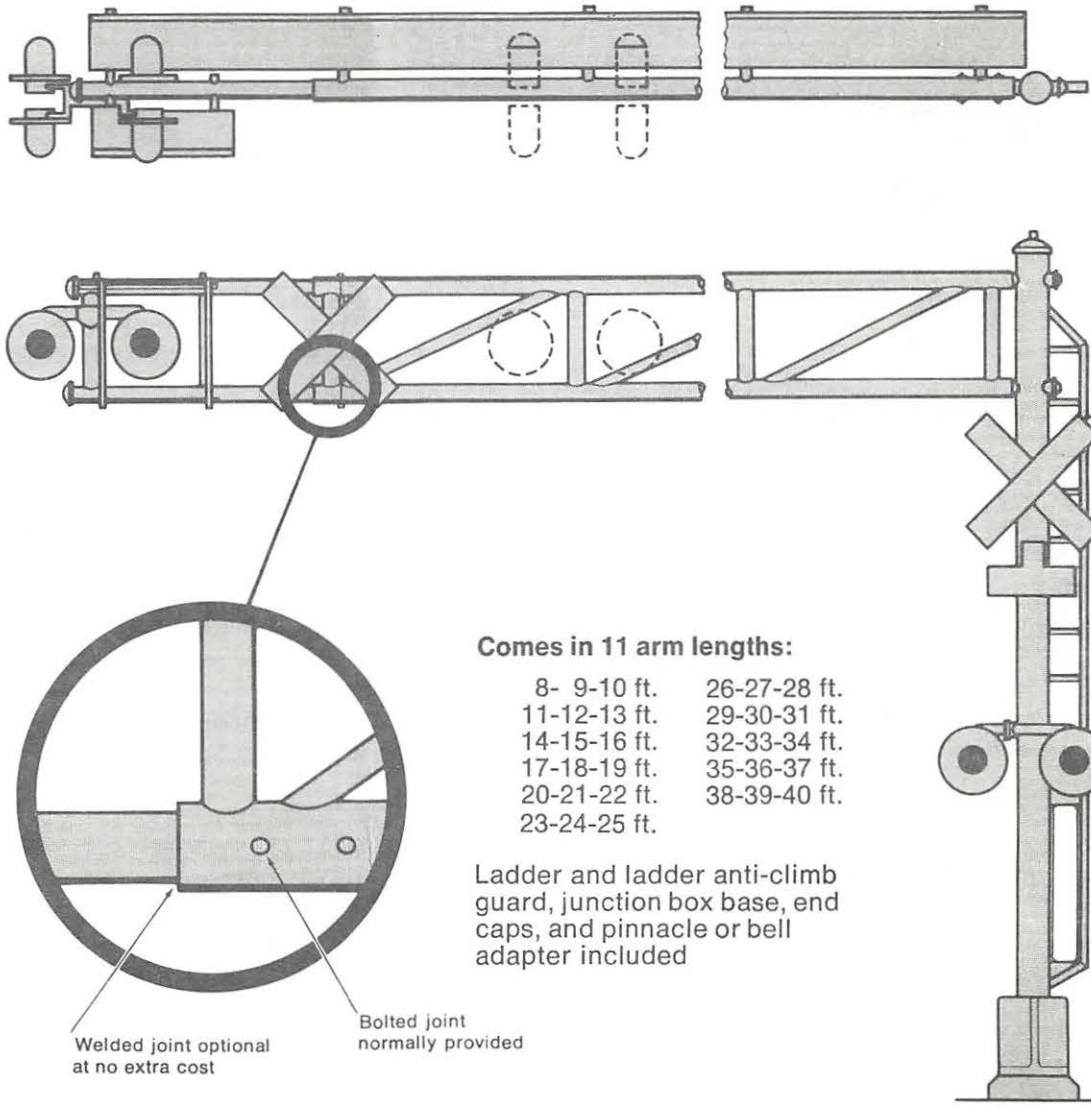


Non-slip safety tread grating normally furnished.

2 types of cantilevers are available to meet grade crossing protection requirements.



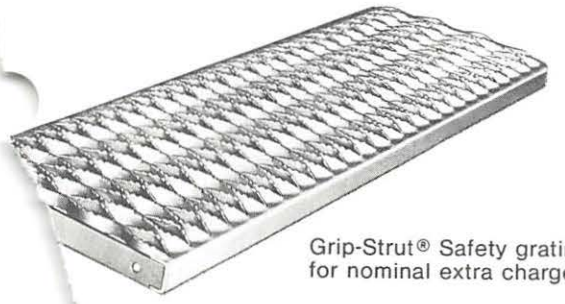
Trombone (adjustable) length Cantilever



Comes in 11 arm lengths:

8- 9-10 ft.	26-27-28 ft.
11-12-13 ft.	29-30-31 ft.
14-15-16 ft.	32-33-34 ft.
17-18-19 ft.	35-36-37 ft.
20-21-22 ft.	38-39-40 ft.
23-24-25 ft.	

Ladder and ladder anti-climb guard, junction box base, end caps, and pinnacle or bell adapter included

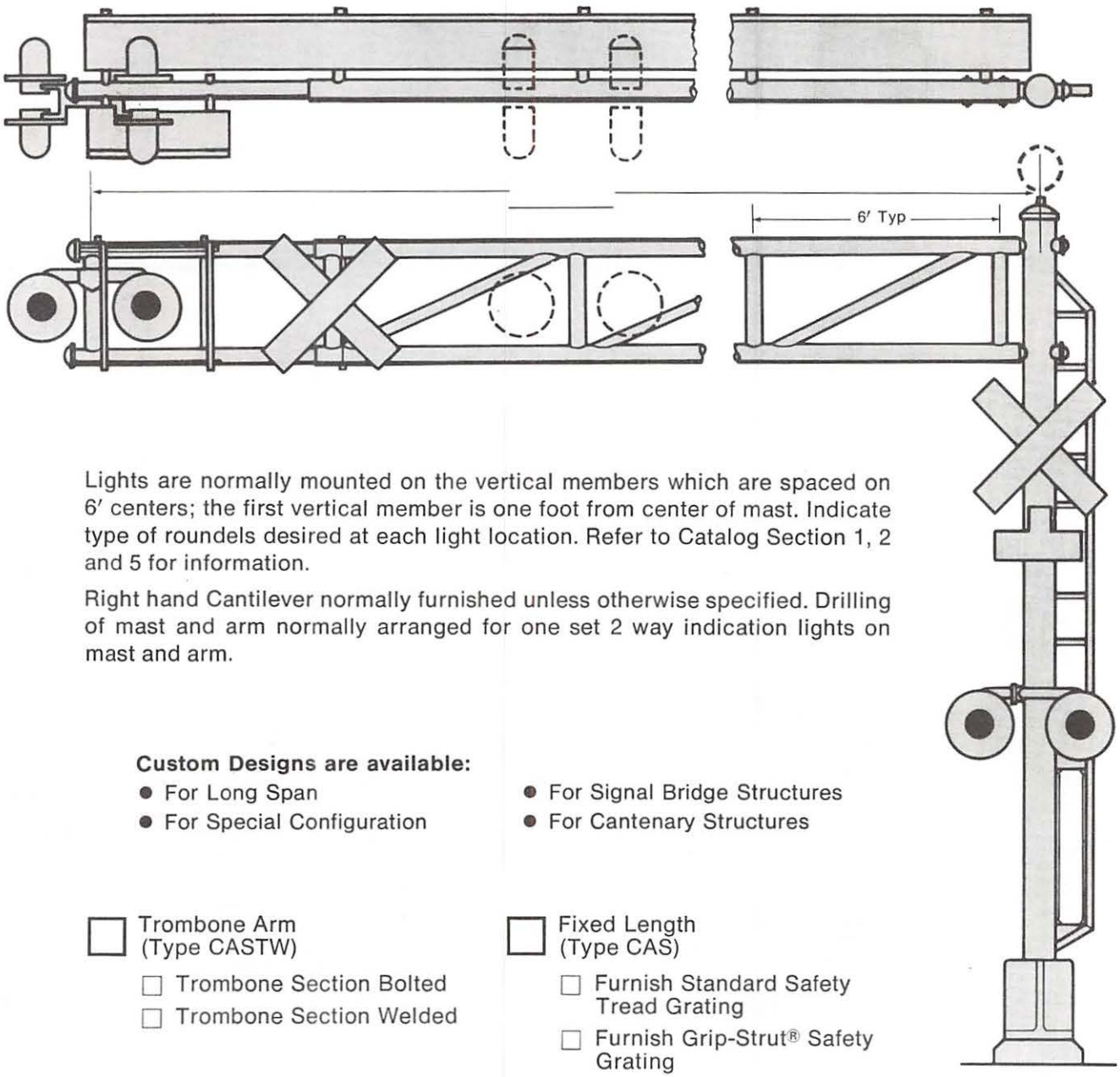


Grip-Strut® Safety grating supplied for nominal extra charge.

Both types of available safety grating comply with OSHA requirements.

ORDERING INFORMATION

We suggest you copy this page and show required arm length, number and direction of lights, signs, bells and other devices.



Lights are normally mounted on the vertical members which are spaced on 6′ centers; the first vertical member is one foot from center of mast. Indicate type of roundels desired at each light location. Refer to Catalog Section 1, 2 and 5 for information.

Right hand Cantilever normally furnished unless otherwise specified. Drilling of mast and arm normally arranged for one set 2 way indication lights on mast and arm.

Custom Designs are available:

- For Long Span
- For Special Configuration
- For Signal Bridge Structures
- For Cantenary Structures

☐ Trombone Arm (Type CASTW)

- ☐ Trombone Section Bolted
- ☐ Trombone Section Welded

☐ Fixed Length (Type CAS)

- ☐ Furnish Standard Safety Tread Grating
- ☐ Furnish Grip-Strut® Safety Grating

WC Hayes
WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632 • Telephone: 312/254-9600 • Telex 25-3206

SECTION 3

Automatic Crossing Gates

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WESTERN-CULLEN-HAYES, Inc.

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PRINTED IN U.S.A.

GENERAL

Model 10 Signals meet, in every respect, the specifications and requirements of the Association of American Railroads, Communication and Signal Section, and of every State having specifications or regulations applying to grade-crossing protection, as well as those of the Board of Transport Commissioners for Canada.

They are especially designed for automatic control by approaching trains and for manual supervision imposed upon automatic control.

Suggested circuits for the automatic control of Model 10 Signals are shown in the instruction booklets. These follow the principles and recommended practices of the Association of American Railroads, Communication and Signal Section, and embody the use only of relays and other devices meeting the specifications and requirements of that organization.

Contributing largely to the instant success of the automatic operation of the Model 10 Signal, when first introduced in June, 1936, was the provision of a prewarning by flashing lights for a period of 3 to 5 seconds before the gate arm starts to descend and the slow, even descent of the gate arm to the horizontal position in a period of 10 to 15 seconds. Even when these signals are manually controlled this prewarning period is retained. This allows ample time for highway traffic to pass the gate after the lights start to flash, or to come to a stop before reaching the gate.

The three electric lights on the gate arm provide an arrestive, highly visible horizontal row of lights in the path of approaching highway vehicles. At all times when the gate arm is in a position to obstruct traffic the tip light burns steadily and the other two lights are caused to alternately flash in unison with the flashing lights on the signal mast.

Many variations from the typical circuits are used to meet local conditions, including timing circuits to adjust the warning period to the speed of approaching trains and thus to limit the time the gates would be down for slower trains. Circuits are frequently introduced to prevent obstruction of highway traffic by trains standing near the crossing, as occurs during station stops.

Assistance in the design of control circuits to meet special conditions will be gladly given by our Engineers, upon request.

MODEL 10 SIGNALS

The Model 10 Signal assemblies, for which ordering reference data is given in this catalog section, are those most commonly used to meet the conditions encountered in the vast majority of locations. Special assemblies can be arranged to meet various unusual requirements. These may include extension brackets to position the flashing lights so as to project the light beams along side streets, or other necessary features required by the circumstances.

In standard Model 10 Signal assemblies the signs, flashing lights and mechanism are mounted on one 5 inch pipe mast with junction-box type base and a bell or pinnacle. Where cantilever type flashing light signals are required, the gate mechanism and gate arm are frequently mounted on a separate short mast located between the cantilever signal and the track, often on a common concrete foundation. However, where clearance does not permit this arrangement, assemblies with offset cantilever brackets are supplied.

Our Engineering Department is at all times glad to cooperate in the design of special assemblies to meet unusual conditions. Given scale plans or details of a crossings, where standard assemblies do not meet the requirements, we will furnish drawings illustrating the arrangement recommended.

MECHANISMS

Two types of mechanism are available for operation of roadway gate arms, as illustrated on Pages 3-8 & 3-9. Both Types 3567 and 3568 are designed to operate the gate arm to the clear, 90°, position by power and from the clear position to the 45° position, descending, by power and from the 45° position to the horizontal position by gravity. The characteristics and a full description of the mechanisms will be found in Instruction Booklet accompanying each mechanism.

Each of the above mechanisms may be had with a kit for the operation of a sidewalk arm. This sidewalk arm operating shaft and internal actuating parts is supplied as a kit, which can be easily installed.

All mechanisms are provided with auxiliary circuit controller contacts for indication of gate arm position, for flashing and gate arm light control, to stop the bell from ringing after the gate arm is down, etc.

The same gate arms and fittings are used with either Type 3567 or Type 3568 mechanism. The counterweight and gate support arms for roadway arms attach to the splined mechanism shaft. The sidewalk arm support casting, when used, attaches to a square end shaft.

COUNTERWEIGHTING AND GATE ARM TORQUE

These mechanisms are of the powered-down type, but the counterweights supplied with each Model 10 Signal are of correct weight to provide down torque required for proper operation of the gate arm from clear to horizontal position by gravity. The counterweights and mounting arrangement are so designed that they may be adjusted as required, without dismantling, to obtain horizontal and clear position torque values as required for each arm length.

Proper counterweighting and torque values are essential elements of Model 10 Signal design. Recommended torque values based on experience, tests and calculations of wind resistance, for gate arms of various lengths, are given in tables in instruction booklets furnished with each mechanism.

Speed Table For Crossing Signal Starts

Seconds		10	15	20	25	30	35	40	45	50	55	60
Miles Per Hour	Feet Per Second	Distance Traveled in Feet										
1	1.46	14.6	22.0	29.3	36.6	44.0	51.3	58.6	66.0	73.3	80.6	88.0
2	2.93	29.3	44.0	58.6	73.3	88.0	102.6	117.3	132.0	146.6	161.3	176.0
3	4.4	44	66	88	110	132	154	176	198	220	242	264
4	5.86	58.6	88	117.3	146.6	176	205.3	334.6	264	293.3	322.6	352
5	7.3	73	110	147	183	220	257	293	330	367	403	440
10	14.6	146	220	293	366	440	513	587	660	733	807	880
15	22.0	220	330	440	550	660	770	880	990	1,100	1,210	1,320
20	29.3	293	440	587	733	880	1,027	1,173	1,320	1,467	1,613	1,760
25	36.7	367	550	733	917	1,100	1,283	1,467	1,650	1,833	2,017	2,200
30	44.0	440	660	880	1,100	1,320	1,540	1,760	1,980	2,200	2,420	2,640
35	51.3	513	770	1,027	1,283	1,540	1,797	2,053	2,310	2,567	2,823	3,080
40	58.7	587	880	1,173	1,467	1,760	2,053	2,347	2,640	2,933	3,227	3,520
45	66.0	660	990	1,320	1,650	1,980	2,310	2,640	2,970	3,300	3,630	3,960
50	73.3	733	1,100	1,467	1,833	2,200	2,567	2,933	3,300	3,667	4,033	4,400
55	80.7	807	1,210	1,613	2,017	2,420	2,823	3,227	3,630	4,033	4,437	4,840
60	88.0	880	1,320	1,760	2,200	2,640	3,080	3,520	3,960	4,400	4,840	5,280
65	95.3	953	1,430	1,907	2,383	2,860	3,337	3,813	4,290	4,767	5,243	5,720
70	102.7	1,027	1,540	2,053	2,567	3,080	3,593	4,107	4,620	5,133	5,647	6,160
75	110.0	1,100	1,650	2,200	2,750	3,300	3,850	4,400	4,590	5,500	6,056	6,600
80	117.3	1,173	1,760	2,347	2,933	3,520	4,107	4,693	5,280	5,867	6,453	7,040
85	124.7	1,247	1,870	2,493	3,117	3,740	4,363	4,987	5,610	6,233	6,858	7,480
90	132.0	1,320	1,980	2,640	3,300	3,960	4,620	5,280	5,940	6,600	7,260	7,920
95	139.3	1,393	2,090	2,787	3,483	4,180	4,877	5,573	6,270	6,967	7,663	8,360
100	146.7	1,467	2,200	2,933	3,667	4,400	5,133	5,867	6,600	7,333	8,067	8,800
105	154.0	1,540	2,310	3,080	3,850	4,620	5,390	6,160	6,930	7,700	8,470	9,240
110	161.3	1,613	2,420	3,227	4,033	4,840	5,647	6,453	7,260	8,067	8,873	9,680
115	168.6	1,686	2,530	3,373	4,217	5,060	5,903	6,747	7,590	8,434	9,277	10,120
120	176.0	1,760	2,640	3,520	4,400	5,280	6,160	7,040	7,920	8,800	9,680	10,560
125	183.3	1,833	2,750	3,667	4,583	5,500	6,417	7,334	8,250	9,167	10,084	11,000
130	190.7	1,907	2,860	3,813	4,767	5,720	6,673	7,627	8,580	9,534	10,487	11,440

NOTE: Where length of track circuit is known, time in seconds can be determined by dividing its length by "Feet Per Second" at train speed selected.

* Does not allow for drop-away time of relays.

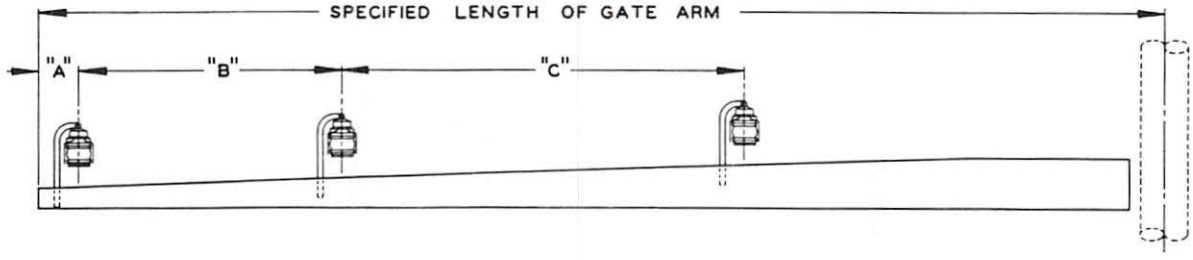
Information Desired With Inquiry For Complete Model 10 Signal Installation

We are pleased to furnish engineering information and to quote on all materials required for installations of Model 10 Signals. Where possible, inquiries should be accompanied by a sketch or scale track plan showing location of highway.

The following information is especially desired:

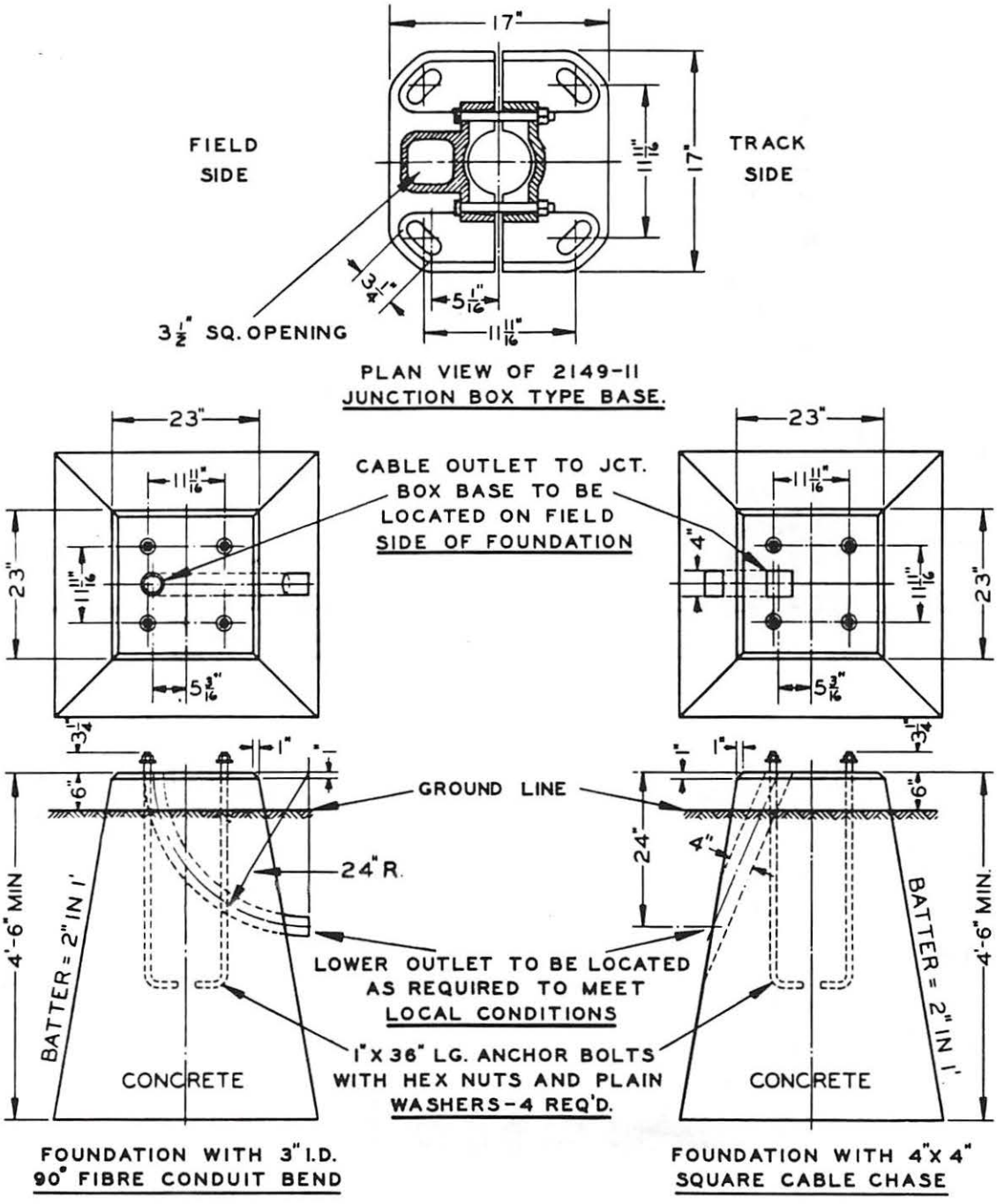
1. Width of roadway or length of roadway gate arm required.
2. If sidewalk arm is required, length thereof.
3. Length of approach track circuit required each side of highway to provide 20 seconds warning for fastest train, or information as to speeds of trains operated over the crossing.
4. If for double track road, specify if protection shall be provided for reverse traffic.
5. What special operating conditions exist within the area?
6. Details of any switches within the approach sections.
7. Circuits of any signaling now in place which will be affected by the installation of crossing protection.
8. Whether diesel or electric propulsion railroad.
9. What electric power is available at crossing?
10. Weight and type of rail, whether four or six hole splice bars and rail drilling.
11. Type of track ballast (rock, gravel, cinders or other material).
12. Type of highway surface or pavement.
13. If electric propulsion railway, specify what propulsion voltage is used and whether A.C. or D.C. If A.C., specify frequency.
14. If electric propulsion railway, state the normal and maximum return current in rails.
15. If electric propulsion railway, specify if single rail or two rail track circuits are preferred.
16. Whether spare space on pole line is available for extending electric power to ends of track circuits.

Suggested Roadway Gate Arm Light Spacing



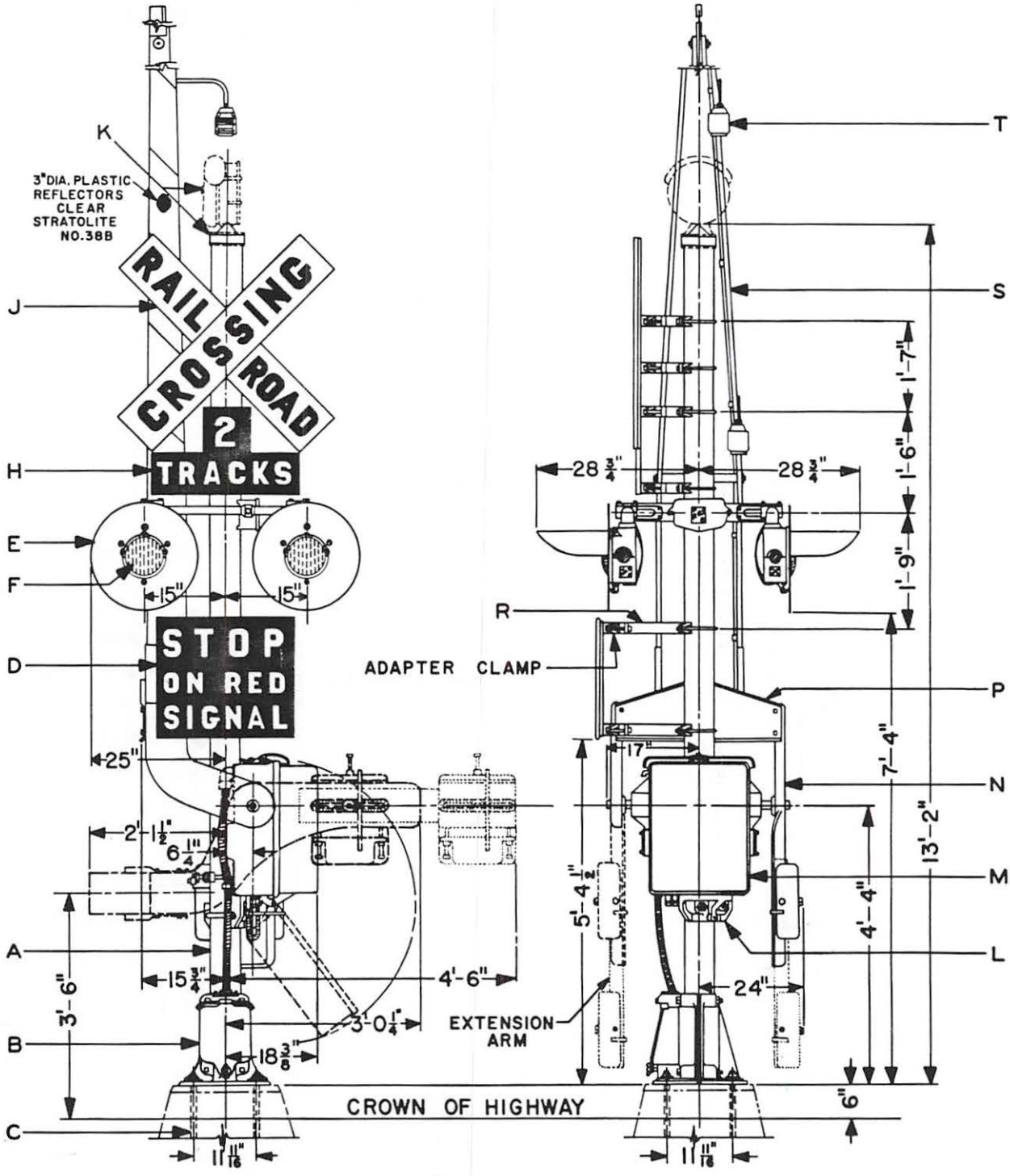
Specified Length of Gate Arm	Dimension "A"	Dimension "B"	Dimension "C"
14 Ft.	6″	36″	5′–0″
15 Ft.	18″	36″	5′–0″
16 Ft.	24″	36″	5′–0″
17 Ft.	24″	36″	5′–0″
18 Ft.	28″	41″	5′–0″
19 Ft.	28″	41″	5′–0″
20 Ft.	28″	4′–0″	5′–0″
21 Ft.	28″	4′–0″	5′–0″
22 Ft.	28″	4′–0″	5′–0″
23 Ft.	28″	4′–0″	5′–0″
24 Ft.	28″	5′–0″	5′–0″
25 Ft.	28″	5′–0″	5′–0″
26 Ft.	28″	5′–0″	5′–0″
27 Ft.	28″	5′–0″	5′–0″
28 Ft.	28″	5′–0″	5′–0″
29 Ft.	36″	6′–0″	6′–0″
30 Ft.	36″	6′–0″	6′–0″
31 Ft.	36″	6′–0″	6′–0″
32 Ft.	36″	7′–6″	7′–6″
33 Ft.	36″	7′–6″	7′–6″
34 Ft.	36″	7′–6″	7′–6″
35 Ft.	36″	9′–0″	9′–0″
36 Ft.	36″	9′–0″	9′–0″
37 Ft.	36″	9′–0″	9′–0″
38 Ft. and Over	36″	10′–0″	10′–0″

Suggested Foundation Designs For Model 10 Signals Using No. 2149-11 Junction Box Type Base



WESTERN-CULLEN-HAYES, Inc.

Model 10 Signal Assembly
For Roadway Arms 14' to 38'

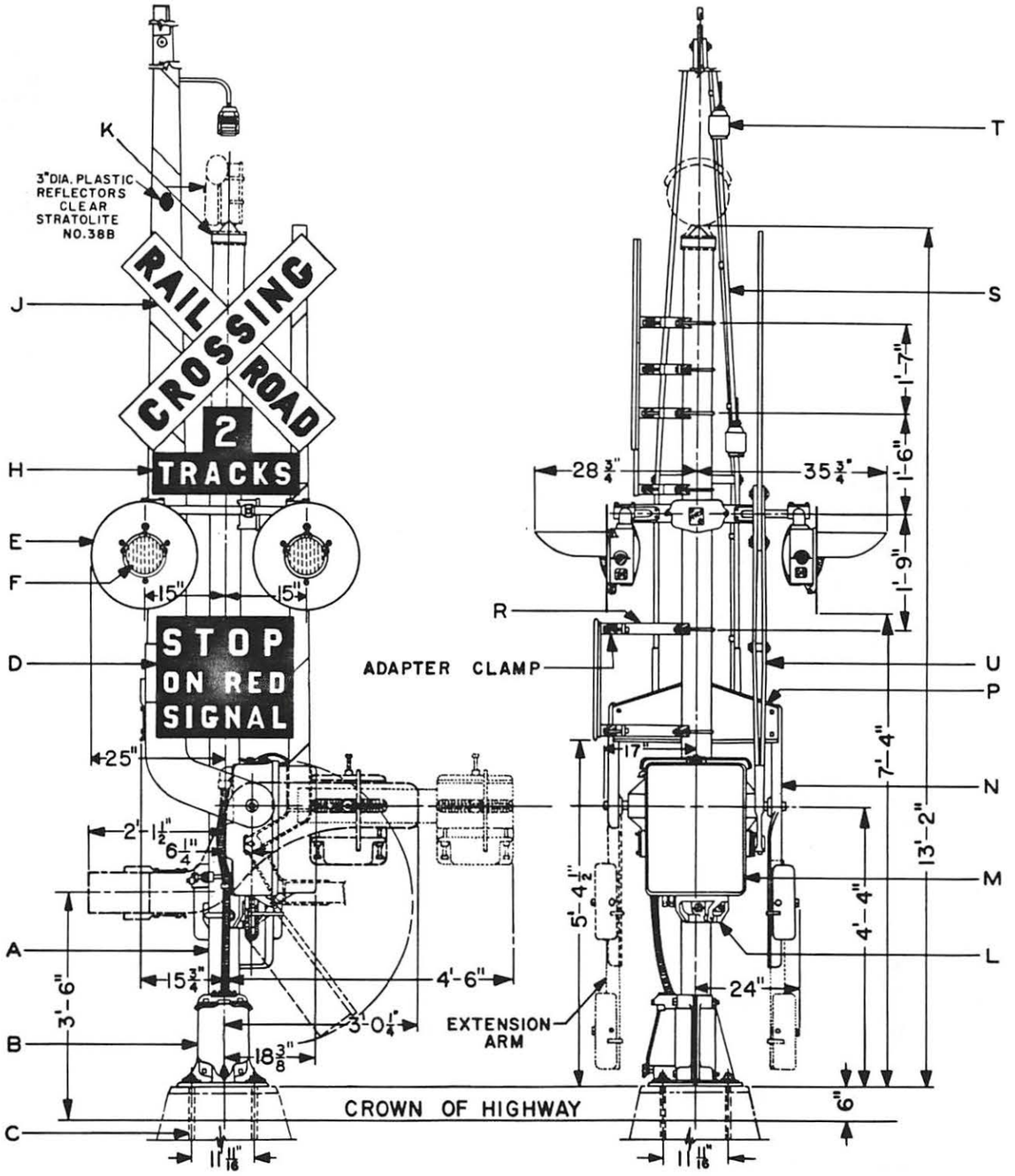


ASSEMBLY WITH 18'-24' ARMS PER —— LINES
ASSEMBLY WITH 25'-30' ARMS PER ---- LINES
ASSEMBLY WITH 31'-38' ARMS PER ····· LINES

Ref. A or Ref. B

Assembly drawings of Model 10 Signals with roadway arm 39' to 44' in length will be furnished on request.

Model 10 Signal Assembly With Sidewalk Arm For Roadway Arms 14' to 38'



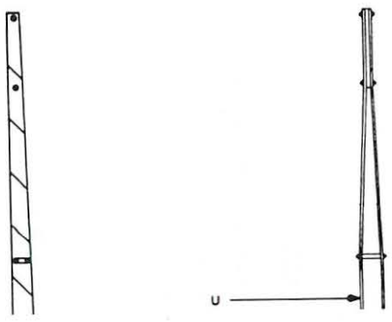
ASSEMBLY WITH 18'-24' ARMS PER —— LINES
ASSEMBLY WITH 25'-30' ARMS PER ---- LINES
ASSEMBLY WITH 31'-38' ARMS PER ····· LINES

Ref. A or B with Ref. C

Assembly drawings of Model 10 Signals with roadway arm 39' to 44' in length will be furnished on request.

Ref. No.	Description	
A	Pipe Mast 5" I.D. x 13'-0" Lg	715-24
A1	Pipe Mast 5" I.D. x 6'-0" Lg	715-16
B	Base (See Pages 3-46 and 3-47)	
C	Anchor Bolts 1" x 36"	11079
D	"Stop On Red Signal" sign (See Section 1, Pages 1-20 and 1-21)	
E	Flashing Light Assembly (See Section 1, Pages 1-15 to 1-19)	
	For Gate Assembly only (See Pages 3-37 to 3-45)	
F	Roundels (See Section 1, Page 1-14)	
G	Specify Voltage and Wattage of Lamps	
H	"Number of Tracks" sign (See Section 1, Pages 1-22 and 1-23)	
J	"Railroad Crossing" sign (See Section 1, Pages 1-24 and 1-25)	
K	Bells (See Section 5)	
	For Pinnacle (See Section 1, Pages 1-10 and 1-11)	
L	Mechanism Support (See Page 3-33 for Details)	3565-380A
M	Gate Mechanism 3567 (See Pages 1-101 to 1-111)	
M	Gate Mechanism 3568 (See Pages 1-115 to 1-125)	
N	Gate and Counterweight Arms (See Pages 3-34 and 3-35)	
P	Gate Arm Support (See Page 3-32)	
R	Extension Bracket (See Page 3-50)	
S	Gate Arm (See Pages 3-15 to 3-23)	
T	Gate Lights (See Pages 3-30 and 3-31)	
U	Sidewalk Gate Arms (See Pages 3-24 to 3-27)	

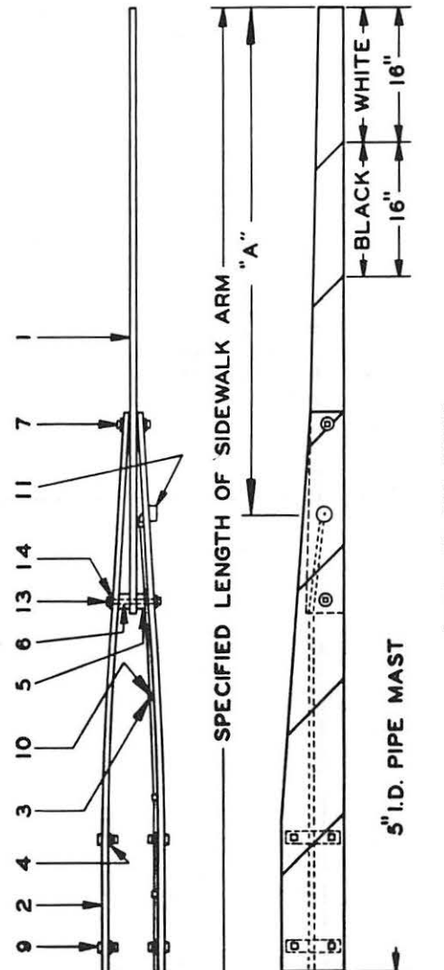
Model 10 Signal Assembly

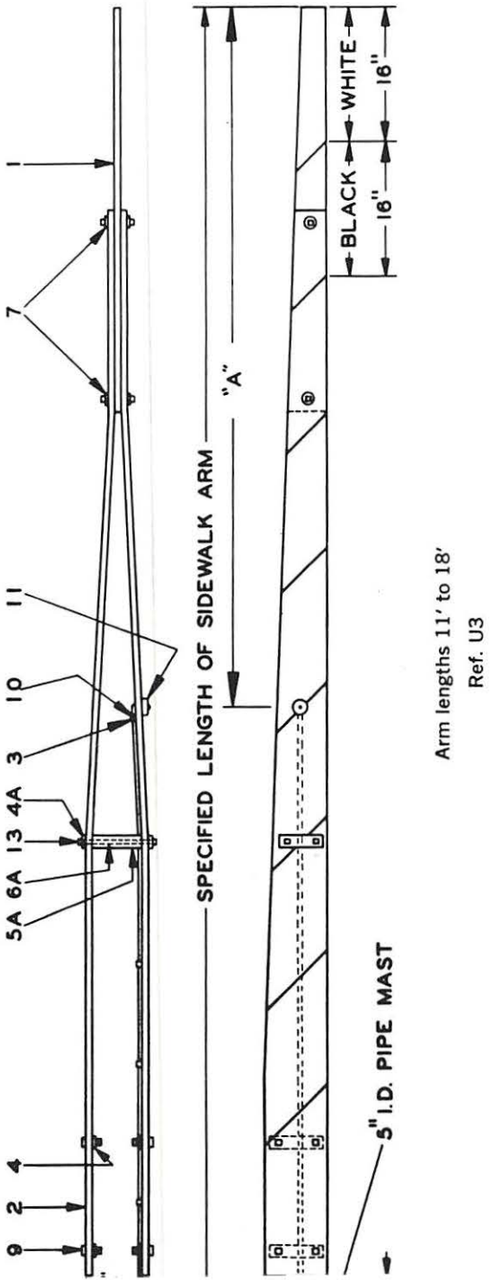


By far the majority of Model 10 Highway Crossing Signal installations require two Model 10 Highway Crossing Signal Assemblies; one with a bell and one with a pinnacle, although frequently two bells are used. Western's 3567-131 or 3568-131 mechanism with gate arm, 970-204 flashing light units, with 5323P roundels, 5″ I.D. mast, junction box type base and reflex-reflecting sheet type signs, meet most requirements.

Sidewalk Arms 6' to 18' Long

Type 3565-34SWX Type 3565-60SWX





Model 10 Signal Assembly

When ordering assemblies other than are shown on Pages 3-10 to 3-12 please use the reference data below, enumerating components required.

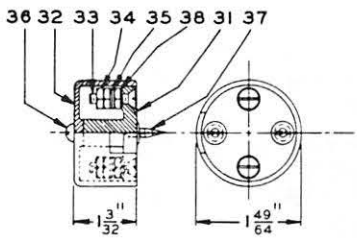
If extra light assemblies are called for, specify degree of angle to right or left of main lights.

We will gladly furnish plans and information for special assemblies, including supporting brackets as shown on Page 3-48 and 3-49, Marker Lights as shown on Page 1-26, etc.

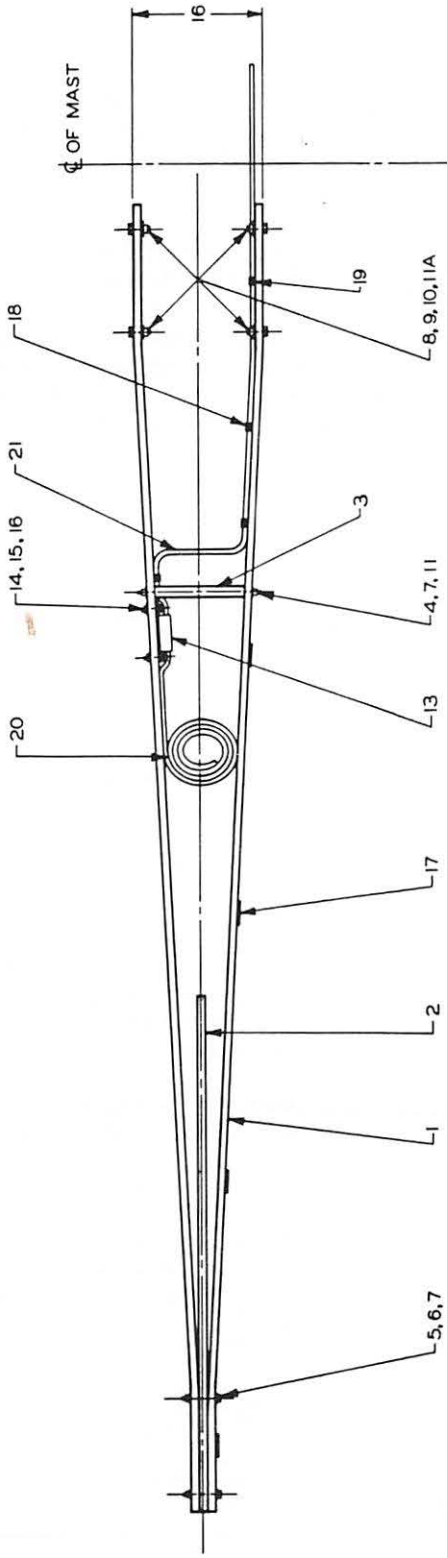
Ref. No.	Description	Piece No.
A	Pipe Mast 5" I.D. x 13'-0" Lg.	715-24
A1	Pipe Mast 5" I.D. x 6'-0" Lg.	715-16
B	Base (See Pages 3-46 and 3-47)	
C	Anchor Bolts 1" x 36"	11079
D	"Stop On Red Signal" sign (See Section 1, Pages 1-20 and 1-21)	
E	Flashing Light Assembly (See Section 1, Pages 1-15 to 1-19)	
	For Gate Assembly only (See Pages 3-37 to 3-45)	
F	Roundels (See Section 1, Page 1-14)	
G	Specify Voltage and Wattage of Lamps	
H	"Number of Tracks" sign (See Section 1, Pages 1-22 and 1-23)	
J	"Railroad Crossing" sign (See Section 1, Pages 1-24 and 1-25)	
K	Bells (See Section 5)	
	For Pinnacle (See Section 1, Pages 1-10 and 1-11)	
L	Mechanism Support (See Page 3-33 for Details)	3565-380A
M	Gate Mechanism 3567 (See Pages 1-101 to 1-111)	
M	Gate Mechanism 3568 (See Pages 1-115 to 1-125)	
N	Gate and Counterweight Arms (See Pages 3-34 and 3-35)	
P	Gate Arm Support (See Page 3-32)	
R	Extension Bracket (See Page 3-50)	
S	Gate Arm (See Pages 3-15 to 3-23)	
T	Gate Lights (See Pages 3-30 and 3-31)	
U	Sidewalk Gate Arms (See Pages 3-24 to 3-27)	
V	Sidewalk Gate Support (See Page 3-36)	
W	Gate Light Jct. Boxes (See Pages 3-14 and 3-15)	
X	Buffer Leg (See Page 3-29)	

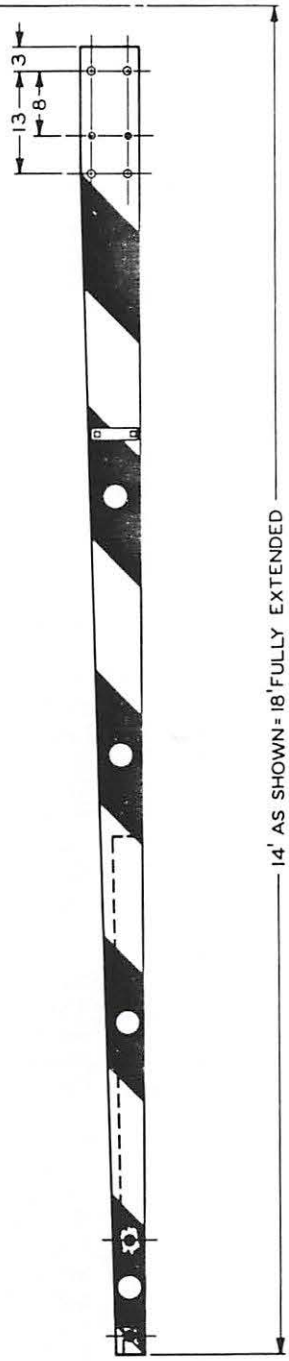
Roadway Arms, Extendable Type

14' MINIMUM 18' MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS

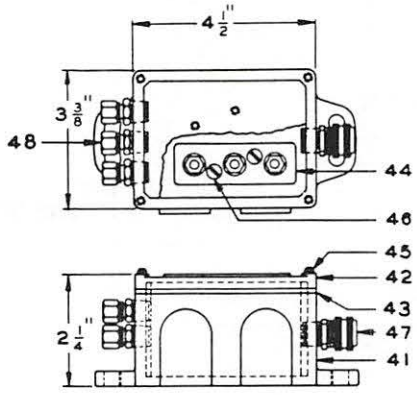


Ref. W





Ref. S



Ref. W1

Roadway Arms, Extendable Type

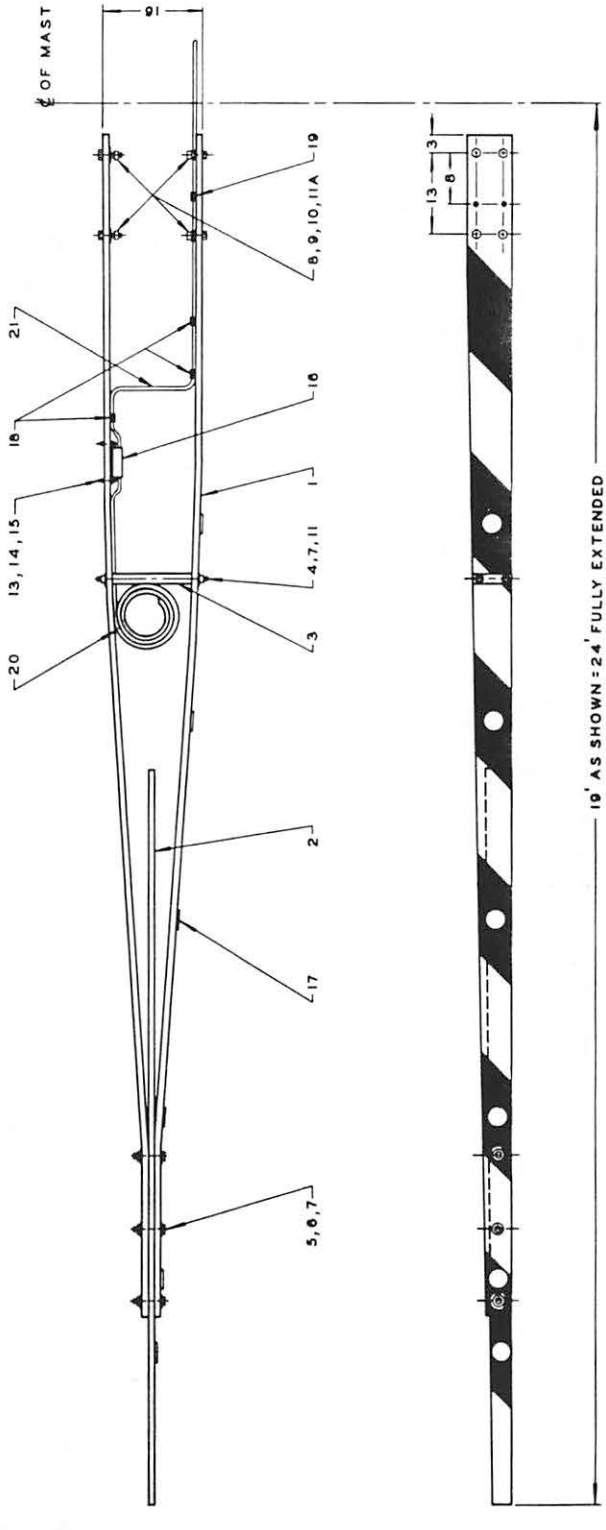
14′ MINIMUM 18′ MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS

Ref. No.	Description	Piece No.
S	Assembly of Roadway Arm with wiring and reflectors, less gate lights	3565-331
S1	Same as Ref. S, less wiring and reflectors	3565-361
S2	Wiring Harness Only. (Includes all material for wiring roadway arm for three gate lights)	3565-341
W	Type 3561 Terminal Block Complete, Bakelite	3561-196
W1	Type 3561 Junction Box Complete, Aluminum	3561-71D
	REPLACEMENTS PARTS	
1	Base Board (Specify Track or Field Side)	3565-54-13
2	Tongue	3565-52A
3	Spacer Block	3565-55
4	Through Stud	3562-66EH
5	Machine Bolt, 3/8″-16 x 3″ lg. hex. hd., stl.	
6	Washer, 7/16″ I.D. x 1½″ O.D. stl.	
7	Square Nut, 3/8″-16, stl.	
8	Machine Bolt, ½″-13 x 2″ lg., hex. hd., stl.	
9	Hex. Nut, ½″-13, stl.	
10	Spring Lock Washer, ½″, stl.	
11	Aluminum Washer Plate	3562-77A
11A	Aluminum Washer Plate	3562-71
13	Junction Box Assembly. (For Details see Ref. 41 to 48 below)	3561-71D
14	Machine Bolt, 5/16″-18 x 1¾″ lg., hex. hd., stl.	
15	Hex. Nut, 5/16″-18 x 1¾″ lg., hex. hd., stl.	
16	Washer, 5/16″ plain, stl.	
17	3″ Diameter Plastic Reflector, with mounting screws	38B
18	Aluminum Cable Clip for one 3-Conductor Cable	
19	Nylon Cable Clip for one 3-Conductor Cable	1953-7A
20	2-Conductor Cable, In Bulk	
21	3-Conductor Cable, In Bulk	
	PARTS NOT ILLUSTRATED	
22	Aluminum Cable Clip for three 2-Conductor Cables	
22A	Same as Ref. 22, but for two 2-Conductor Cables	
22B	Same as Ref. 22, but for one 2-Conductor Cable	
23	Wood Screws for above clips, No. 8 x ¾″ rd. hd., brass	
24	½″ Cable Grip, for one 3-Conductor Cable	DB-990
25	Pipe Reducer, ¾″ to ½″, for Ref. 24	
	REPLACEMENTS PARTS FOR REF. W AND W1	
31	Terminal Block, Bakelite	3561-197A
32	Cover, Bakelite	3561-198
33	No. 10-32 x 7/8″ Lg. fl. hd. mach. screw, brass	
34	No. 10-32 Hex. Nut, brass	
35	No. 10 Plain Washer, brass	
36	No. 10-32 x ½″ Lg. rd. hd. mach. screw, brass	
37	No. 6 x ¾″ Lg. fl. hd. wood screw, brass	
38	No. 10 Internal Everlock Washer, steel	
41	Box, cast aluminum	3561-75J
42	Cover, cast aluminum	3561-76
43	Gasket	3561-77A
44	Terminal Block	1005-102
45	No. 8-32 x ¾″ Lg. rd. hd. mach. screw & lock washer, brass	
46	No. 8-32 x 3/8″ Lg. rd. hd. mach. screw, brass	
47	3/8″ Cable Grip, for one 3-Conductor Cable	DB-938
48	Compression Connector	1580-7

WESTERN-CULLEN-HAYES, Inc.

Roadway Arms, Extendable Type

19′ MINIMUM 24′ MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS



Ref. S3

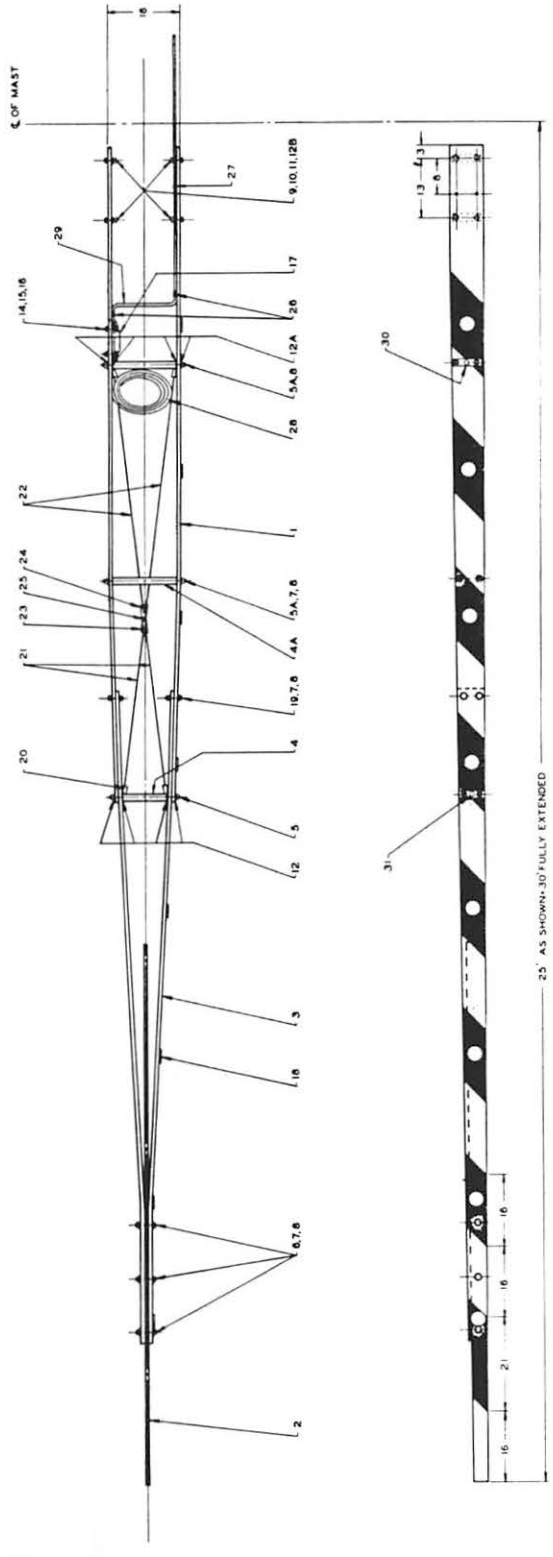
Roadway Arms, Extendable Type

19' MINIMUM 24' MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS

Ref. No.	Description	Piece No.
S3	Assembly of Roadway Arm with wiring and reflectors, less gate lights	3565-332
S4	Same as Ref. S3, less wiring and reflectors	3565-362
S5	Wiring Harness Only. (Includes all material for wiring roadway arm for three gate lights)	3565-342
	REPLACEMENT PARTS	
1	Base Board (Specify Track or Field Side)	3565-54-16
2	Tongue	3565-52B
3	Spacer Block	3565-55
4	Through Stud	3562-66EH
5	Machine Bolt, 3/8"-16 x 3" lg. hex. hd., stl.	
6	Washer, 7/16" I.D. x 1½" O.D., stl.	
7	Square Nut, 3/8"-16, stl.	
8	Machine Bolt, ½"-13 x 2" lg., hex. hd., stl.	
9	Hex. Nut, ½"-13, stl.	
10	Spring Lock Washer, ½", stl.	
11	Aluminum Washer Plate	3565-56
11A	Aluminum Washer Plate	3562-71
13	Machine Bolt, 5/16"-18 x 1¾" lg., hex. hd., stl.	
14	Hex. Nut, 5/16"-18, stl.	
15	Washer, 5/16", plain, stl.	
16	Junction Box Assembly. (For Details see Pages 3-14 and 3-15)	3561-71D
17	3" Diameter Plastic Reflector, with mounting screws	38B
18	Aluminum Cable Clip for one 3-Conductor Cable	
19	Nylon Cable Clip for one 3-Conductor Cable	1953-7A
20	2-Conductor Cable, In Bulk	
21	3-Conductor Cable, In Bulk	
	PARTS NOT ILLUSTRATED	
22	Aluminum Cable Clip for three 2-Conductor Cables	
22A	Same as Ref. 22, but for two 2-Conductor Cables	
22B	Same as Ref. 22, but for one 2-Conductor Cable	
23	Wood Screws for above clips, No. 8 x ¾", rd. hd., brass	
24	Terminal Block and Mounting screws (For Details see Pages 3-14 and 3-15)	3561-196
25	½" Cable Grip, for one 3-Conductor Cable	DB-990
26	Pipe Reducer, ¾" to ½", for Ref. 25	

Roadway Arms, Extendable Type

25′ MINIMUM 30′ MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS



Ref. S6

Roadway Arms, Extendable Type

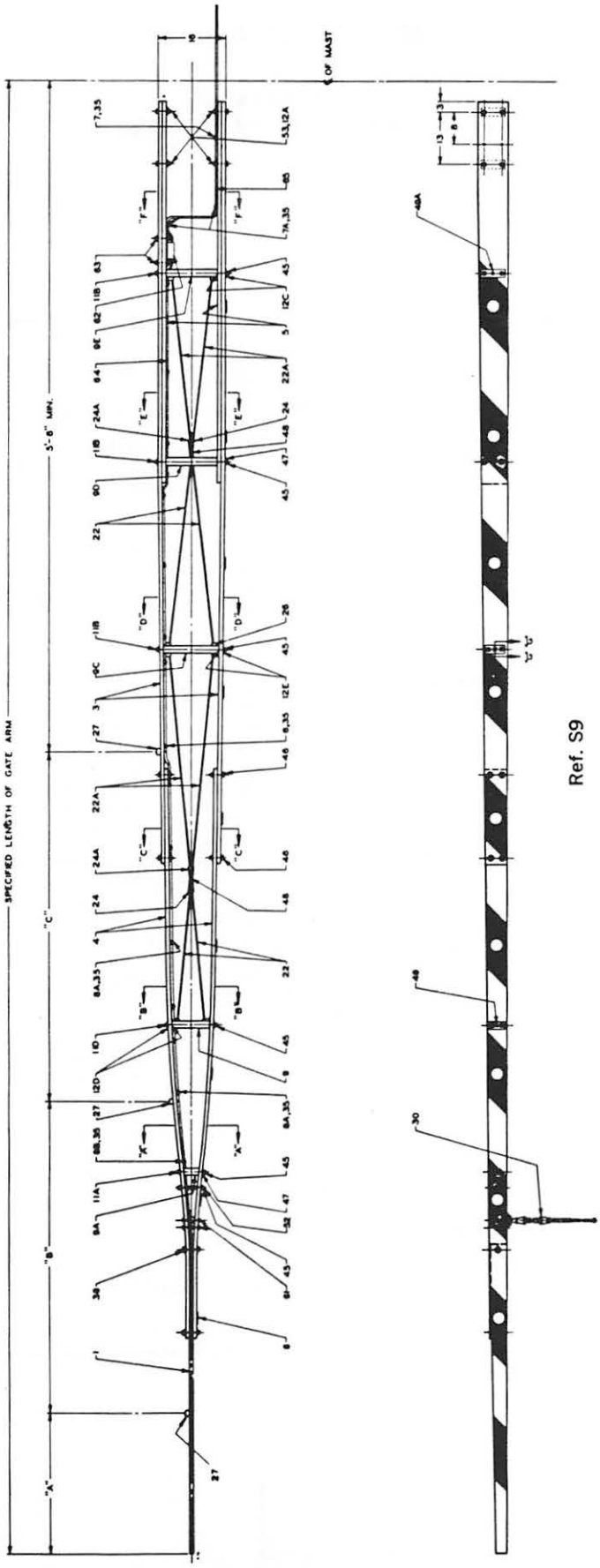
25' MINIMUM 30' MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS

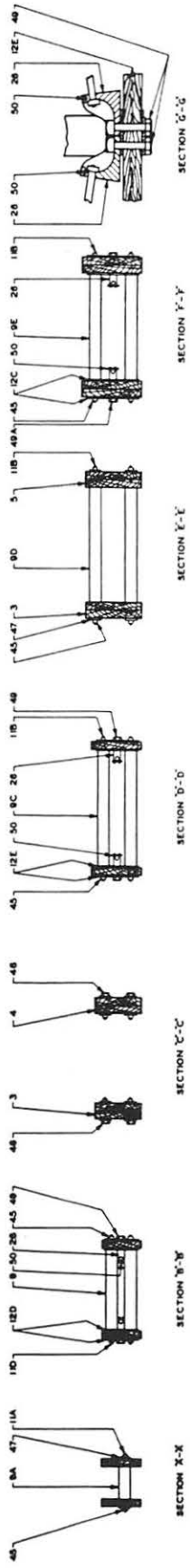
Ref. No.	Description	Piece No.
S6	Assembly of Roadway Arm with wiring and reflectors, less gate lights	3565-333
S7	Same as Ref. S6, less wiring and lights	3565-363
S8	Wiring Harness Only (Includes all material for wiring roadway arm for three gate lights)	3565-343
	REPLACEMENT PARTS	
1	Base Board (Specify Track or Field side)	3562-53-12
2	Tongue	3562-52B
3	Side Board (Specify Track or Field side)	3562-54-12E
4	Spacer Block	3562-75
4A	Spacer Block	3562-74
5	Through Stud	3562-66B
5A	Through Stud	3562-66
6	Machine Bolt, 3/8"-16 x 3" lg. hex. hd., stl.	
7	Washer, 7/16" I.D. x 1½" O.D., stl.	
8	Square Nut, 3/8"-16, stl.	
9	Machine Bolt, ½"-13 x 2" lg. hex. hd., stl.	
10	Hex. Nut, ½"-13, stl.	
11	Spring Lock Washer, ½", stl.	
12	Aluminum Washer Plate	3562-72A
12A	Aluminum Washer Plate	3562-71A
12B	Aluminum Washer Plate	3562-71
14	Machine Bolt, 5/16"-18 x 1¾" lg., hex. hd., stl.	
15	Hex. Nut, 5/16"-18, stl.	
16	Washer, 5/16", plain, stl.	
17	Junction Box Assembly (For Details see Pages 3-14 and 3-15)	3561-71D
18	3" Diameter Plastic Reflector, with Mounting Screws	38B
19	Machine Bolt, 3/8"-16 x 2¼" lg., hex. hd., stl.	
20	Tie-Rod Clip Assembly	3562-70A
21	Tie-Rod and Nut Assembly 41⅛" lg., right hand thread	3562-63E
22	Tie-Rod and Nut Assembly 48" lg., left hand thread	3562-63F
23	Turnbuckle	3562-67
24	Turnbuckle	3562-68
25	Cap Screw, ¼"-20 x 1¼" lg., hex. hd., stl.	
26	Aluminum Cable Clip for one 3-Conductor Cable	
27	Nylon Cable Clip for one 3-Conductor Cable	1953-7A
28	2-Conductor Cable, In Bulk	
29	3-Conductor Cable, In Bulk	
30	Machine Bolt, 5/16"-18 x 1¾" lg., hex. hd., with sq. nut	
31	Machine Bolt, 5/16"-18 x 2½" lg., hex. hd., with sq. nut	
	PARTS NOT ILLUSTRATED	
32	Wood Screws, No. 8 x ¾" rd. hd., Brass, for Cable Clips	
33	Terminal Block and Mounting Screws (For Details see Pages 3-14 and 3-15)	3561-196
34	½" Cable Grip, for one 3-Conductor Cable	DB-990
35	Pipe Reducer, ¾" to ½", for Ref. 34	

WESTERN-CULLEN-HAYES, Inc.

Roadway Arms

31′ TO 38′ LONG, AS SPECIFIED





Roadway Arms

31' TO 38' LONG, AS SPECIFIED

Each arm in this range is constructed to the length specified.

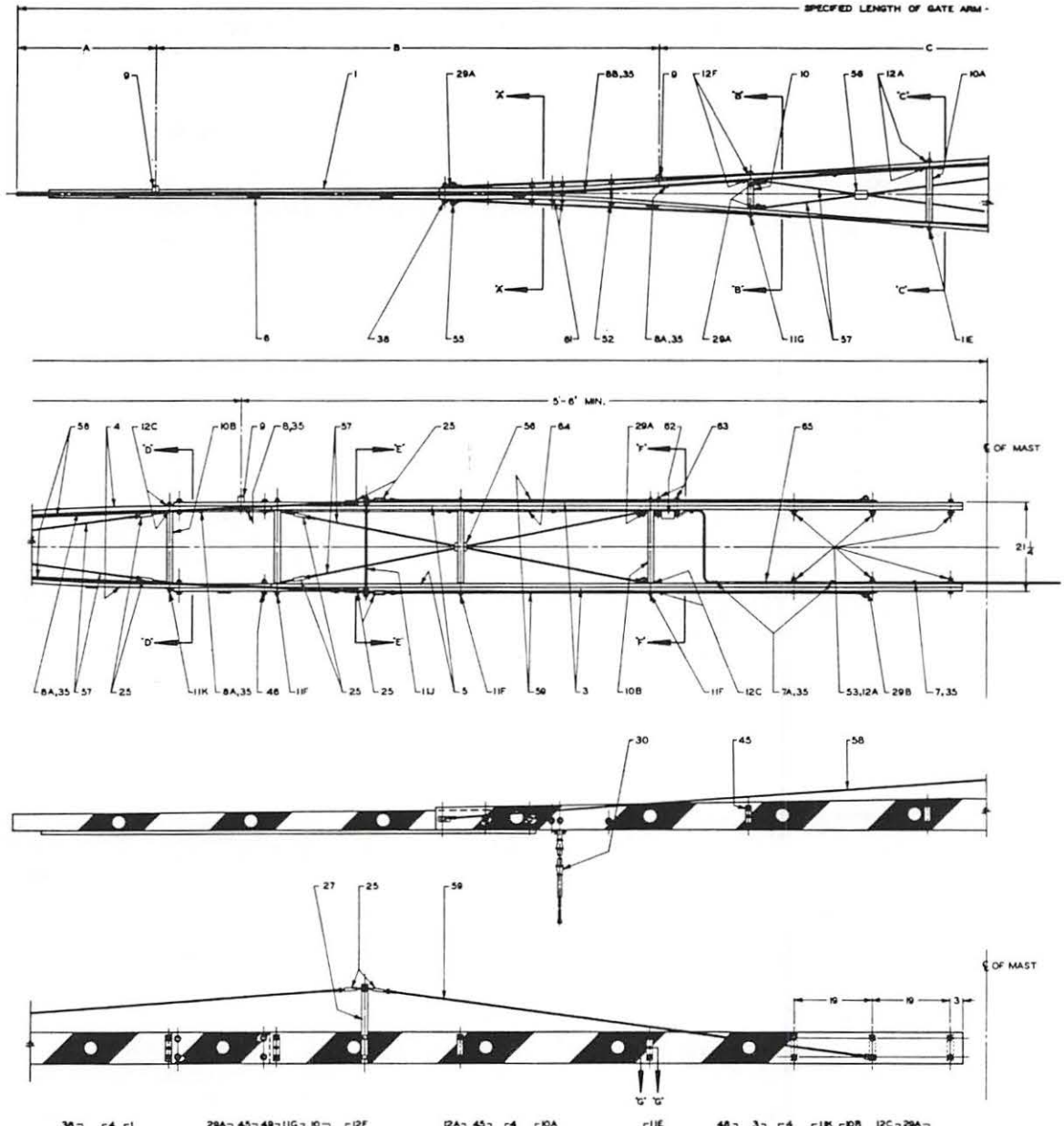
Ref. No.	Description	Piece No.
S9	Assembly of Roadway Arm, complete with wiring and reflectors less gate lights. (Specify Length of Arm and Dimensions "A," "B" and "C")	3565-34ML
S10	Same as Ref. A, less wiring and reflectors (Specify Length of Arm)	3565-60
S11	Wiring Harness Only (Includes all material for wiring roadway arm for three gate lights.) (Specify Length of Arm and Dimensions "A," "B" and "C")	3565-215MB
	REPLACEMENT PARTS	
1	Tongue	See Table
3	Base Board (Specify Track or Field side)	See Table
4	Side Board (Specify Track or Field side)	See Table
5	Re-enforcing Board	3562-53-8
6	3" Dia. Plastic Reflector	38B
7	Nylon Cable Clip, for one 3-Conductor Cable	1953-7A
7A	Aluminum Cable Clip, for one 3-Conductor Cable	
8	Aluminum Cable Clip, for three 2-Conductor Cables	
8A	Same as Ref. 8, but for two 2-Conductor Cables	
8B	Same as Ref. 8, but for one 2-Conductor Cable	
9	Spacer Block, 10⅛" lg.	3562-75
9A	Spacer Block, 4" lg.	3562-76
9C	Spacer Block, 14⅛" lg.	3562-87
9D	Spacer Block, 13" lg.	3562-74XR
9E	Spacer Block, 12¾" lg.	3562-74R
11A	Through Stud, 6½" lg.	3562-66D
11B	Through Stud, 16⅞" lg.	3562-66
11D	Through Stud, 12¾" lg.	3562-66E
12A	Washer Plate	3562-71
12C	Washer Plate	3562-71A
12D	Washer Plate	3562-82
12E	Washer Plate	3562-72B
22	Tie-Rod and Nut Assembly, 41½" lg., right hand thread	3562-63E
22A	Tie-Rod and Nut Assembly, 48" lg., left hand thread	3562-63F
24	Turnbuckle	3562-67
24A	Turnbuckle	3562-68
26	Tie-Rod Clip	3562-70A
27	Assembly of Terminal Block (For Details see Pages 3-14 and 3-15)	3561-196
30	Buffer Leg (For Details see Page 3-29)	3562-316A
35	No. 8 x ¾" rd. hd. wood screw, brass	
38	Machine Bolt, ⅜"-16 x 3" lg., hex. hd., sq. nut and 2 plain washers	
45	Sq. Nut, ⅜"-16, stl.	
46	Machine Bolt. ⅜"-16 x 2¼" lg., hex. hd., stl., sq. nut and 2 plain washers	
47	Washer, 7/16" I.D. x 1½" O.D., plain, stl.	
48	Cap Screw, ¼"-20 x 1¼" lg., hex. hd., stl.	
49	Machine Bolt, hex. hd., 5/16"-18 x 1¾" lg., and sq. nut	
49A	Machine Bolt, hex. hd., 5/16"-18 x 2½" lg., and sq. nut	
50	Cotter Pin, ⅛" x 1½" lg., stl.	
52	Through Stud, 5⅛" lg.	3562-66AK
53	Machine Bolt, ⅛"-13 x 2¾" lg., hex. hd., stl., hex. nut and lock washer	
61	Rivet, rd. hd., stl., ⅜" x 3½", complete with cotter pin	3362-133A
62	Junction Box Assembly (For Details see Pages 3-14 and 3-15)	3561-71D
63	Machine Bolt. 5/16"-18 x 1¾" lg., hex. hd., hex. nut and 2 plain washers	
64	2-Conductor Cable, In Bulk	
65	3-Conductor Cable, In Bulk	
	PARTS NOT ILLUSTRATED	
70	½" Cable Grip, for 3-Conductor Cable	DB990
71	Pipe Reducer, ¾" to ½", for Ref. 70	

Table

Specified Length of Gate Arm	Reference 1 Tongue Piece No.	Reference 3 Base Board Piece No.	Reference 4 Side Board Piece No.
31	3562-52A	3562-16	3562-54-12A
32	3562-52B	3562-16	3562-54-12A
33	3562-52C	3562-16	3562-54-12A
34	3562-52D	3562-16	3562-54-12A
35	3562-52A	3562-16A	3562-54-16
36	3562-52B	3562-16A	3562-54-16
37	3562-52C	3562-16A	3562-54-16
38	3562-52D	3562-16A	3562-54-16

Roadway Arms

39' TO 44' LONG



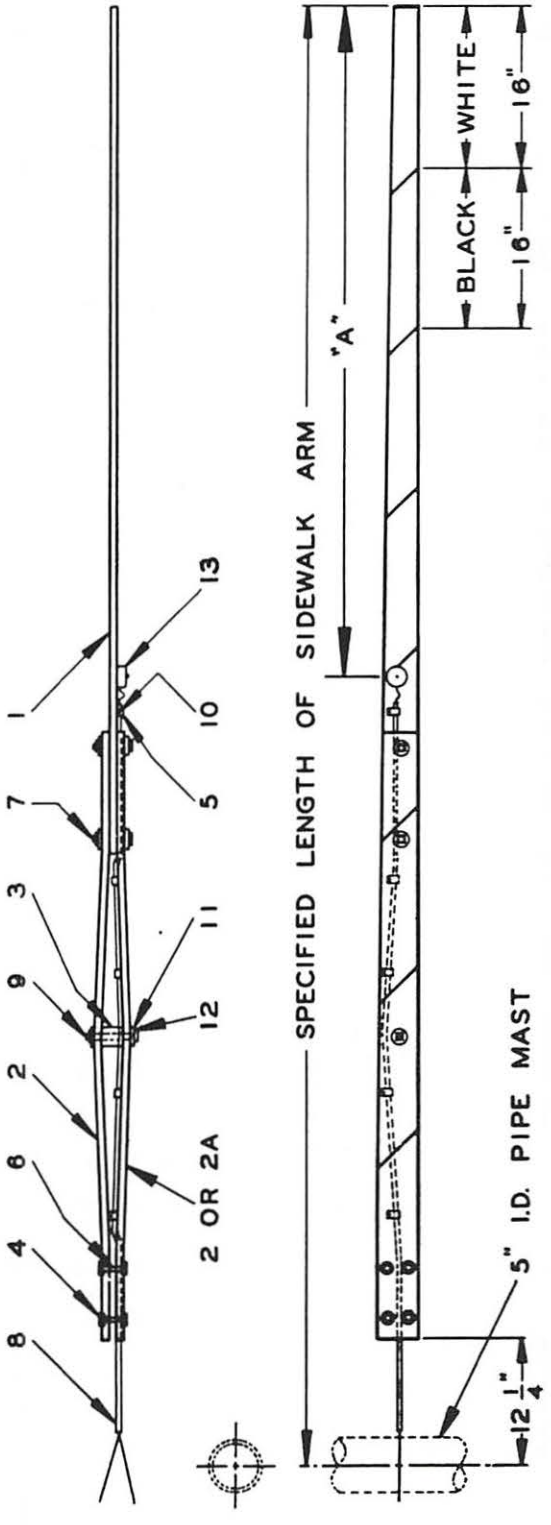
Roadway Arms

39′ TO 44′ LONG

Ref. No.	Description	Piece No.
S12	Assembly of Roadway Arm complete with wiring and reflectors, less gate lights. (Specify Length of Arm and Dimensions "A," "B" and "C")	3565-34ML
S13	Same as Ref. S12, less wiring and reflectors. (Specify Length of Arm)	3565-60
S14	Wiring Harness Only. (Includes all material for wiring roadway arm for three gate lights.) (Specify Length of Arm and Dimensions "A," "B" and "C")	3565-215MB
	REPLACEMENT PARTS	
1	Tongue, for 39′ arm	3562-52J
1A	Tongue, for 40′ arm	3562-52K
1B	Tongue, for 41′ arm	3562-52L
1C	Tongue, for 42′ arm	3562-52M
1D	Tongue, for 43′ arm	3562-52N
1E	Tongue, for 44′ arm	3562-52P
3	Base Board, (Specify Track or Field side)	3562-54-16F
4	Side Board, (Specify Track or Field side)	3562-54-16A
5	Reinforcing Board	3562-54-14E
6	3″ Diameter Plastic Reflector	38B
7	Nylon Cable Clip, for one 3-Conductor Cable	1953-7A
7A	Aluminum Cable Clip, for one 3-Conductor Cable	
8	Aluminum Cable Clip, for three 2-Conductor Cables	
8A	Same as Ref. 8, but for two 2-Conductor Cables	
8B	Same as Ref. 8, but for one 2-Conductor Cable	
9	Assembly of Terminal Block (For Details see Pages 3-14 and 3-15)	3561-196
10	Spacer Tubing, 7″ long	3562-99B
10A	Spacer Tubing, 13¼″ long	3562-99A
10B	Spacer Tubing, 17¾″ long	3562-99
11E	Through Stud, 16″ long	3562-66X
11F	Through Stud, 21¾″ long	3562-66Y
11G	Through Stud, 10⅛″ long	3562-66F
11J	Through Stud, 24″ long	3562-272B
11K	Through Stud, 20¼″ long	3562-66N
12A	Washer Plate	3562-71
12C	Washer Plate	3562-71A
12F	Washer Plate	3562-273
25	Turnbuckle	3562-184
27	Upright Support	3562-271
29A	Guy Wire Clip	3562-283
29B	Guy Wire Clip	3562-282A
30	Buffer Leg (For Details see Page 3-29)	3562-316A
35	No. 8 x ¾″ rd. hd. wood screws, brass	
38	Machine Bolt, ⅜″-16 x 3″ lg., hex. hd., stl., sq. nut and two plain washers	
45	Sq. Nut, ⅜″-16, stl.	
46	Machine Bolt, ⅜″-16 x 2¼″ lg., hex. hd., stl., sq. nut and 2 plain washers	
47	Washer, 7/16″ I.D. x 1⅛″ O.D., Plain, stl.	
49	Machine Bolt, hex. hd., ½″-13 x 1¾″ long and sq. nut	
52	Through Stud, 5⅛″ long	3562-66AK
53	Machine Bolt, hex. hd., ½″-13 x 2¾″ lg. hex. nut and lock washer	
55	Thimble	90591
56	Cable Separator	3562-282
57	Guy Wire Subassembly, 7′-6″ lg., (Includes Ref. 25, 55 and 60)	3562-284B
58	Guy Wire Subassembly, 18′-0″ lg., (Includes Ref. 25, 55 and 60)	3562-284A
59	Guy Wire Subassembly, 10′-0″ lg., (Includes Ref. 25, 55 and 60)	3562-284
60	Crosby Clip	90592
61	Rivet, rd. hd., stl., ⅜″ x 3⅛″, complete with cotter pin	3562-133A
62	Junction Box Assembly. (For Details see Pages 3-14 and 3-15)	3561-71D
63	Machine Bolt, 5/16″-18 x 1¾″ lg., hex. hd., hex. nut and 2 plain washers	
64	2-Conductor Cable, In Bulk	
65	3-Conductor Cable, In Bulk	
	PARTS NOT ILLUSTRATED	
70	½″ Cable Grip, for 3-Conductor Cable	DB990
71	Pipe Reducer, ¾″ to ½″	

WESTERN-CULLEN-HAYES, Inc.

Sidewalk Arms 6' to 18' Long
Type 3565-34SW Type 3565-60SW
For Model 10 Signals



Ref. U

Sidewalk Arms 6' to 18' Long
Type 3565-34SW Type 3565-60SW
For Model 10 Signals

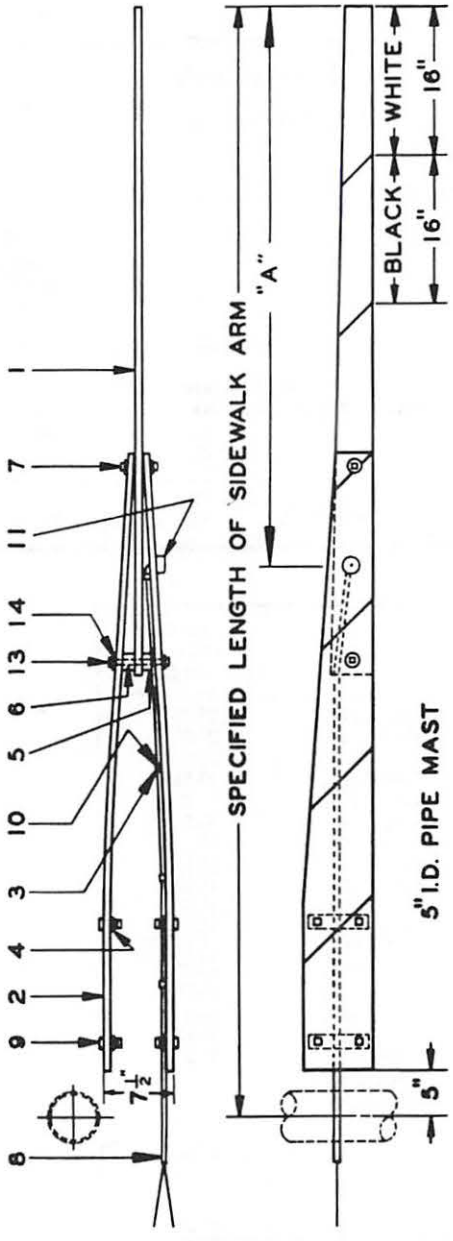
Ref. No.	Description	Piece No.
U	Assembly of Sidewalk Arm Complete with Wiring (Less Light) (Specify Length of Sidewalk Arm and Dimension "A")	3565-34SW
U1	Assembly of Sidewalk Arm Complete (Less Wiring and Light) (Specify Length of Sidewalk Arm)	3565-60SW
	REPLACEMENT PARTS	
1	Tongue	See Table
2	Base Board	See Table
2A	Base Board (For 3565-34SW only)	See Table
3	Spacer Block	3565-150
4	5/16" Plain Washer	
5	Clip	3562-95
6	Cap Screw, 5/16"-24 S.A.E. x 1½" Lg. hex. hd. stl.	
7	Mach. Bolt, ⅜"-16 x 3¼" Lg. sq. hd. stl., hex. Nut and two Plain Washers	
8	No. 18-2 Conductor Neoprene Covered Type "S" Cord. (Specify Length)	
9	Through Stud	3562-66DD
10	Wood Screw No. 10 x ¾" Lg. rd. hd. brass	
11	Washer ⅜" Plain, Stl.	
12	Hex. Nut ⅜"-16 Stl.	
13	Assembly of Terminal Block (For Details see Pages 3-14 and 3-15)	3561-196

Table

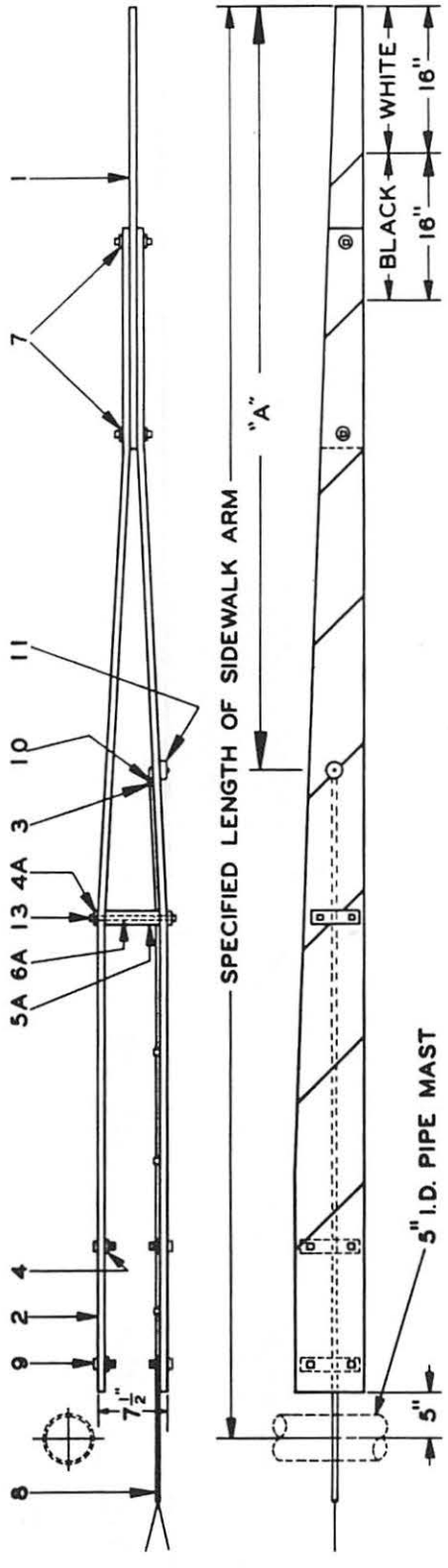
Specified Length of Gate Arm	Ref. No. 1	Ref. No. 2	Ref. No. 2A	Suggested Values For Dimension "A"
6'-0"	3565-142-1	3565-141	3565-141A	2'-2"
6'-6"	3565-142-1A	3565-141	3565-141A	2'-5"
7'-0"	3565-142-2	3565-141	3565-141A	2'-8"
7'-6"	3565-142-2A	3565-141	3565-141A	2'-11"
8'-0"	3565-142-3	3565-141	3565-141A	3'-2"
8'-6"	3565-142-3A	3565-141	3565-141A	3'-5"
9'-0"	3565-142-4	3565-141	3565-141A	3'-8"
9'-6"	3565-142-4A	3565-141	3565-141A	3'-11"
10'-0"	3565-142-5	3565-141	3565-141A	4'-2"
10'-6"	3565-142-5A	3565-141	3565-141A	4'-5"
11'-0"	3565-142-6	3565-141	3565-141A	4'-8"
11'-6"	3565-142-6A	3565-141	3565-141A	4'-11"
12'-0"	3565-142-7	3565-141	3565-141A	5'-2"
12'-6"	3565-142-4A	3565-155	3565-155A	5'-5"
13'-0"	3565-142-5	3565-155	3565-155A	5'-8"
13'-6"	3565-142-5A	3565-155	3565-155A	5'-11"
14'-0"	3565-142-6	3565-155	3565-155A	6'-2"
14'-6"	3565-142-6A	3565-155	3565-155A	6'-5"
15'-0"	3565-142-7	3565-155	3565-155A	6'-8"
15'-6"	3565-142-4A	3565-156	3565-156A	6'-11"
16'-0"	3565-142-5	3565-156	3565-156A	7'-2"
16'-6"	3565-142-5A	3565-156	3565-156A	7'-5"
17'-0"	3565-142-6	3565-156	3565-156A	7'-8"
17'-6"	3565-142-6A	3565-156	3565-156A	7'-11"
18'-0"	3565-142-7	3565-156	3565-156A	8'-2"

WESTERN-CULLEN-HAYES, Inc.

Sidewalk Arms 6' to 18' Long
Type 3565-34SWX Type 3565-60SWX



Arm lengths 6' to 10'-6"
Ref. U2



Arm lengths 11' to 18'
Ref. U3

Sidewalk Arms 6' to 18' Long
Type 3565-34SWX Type 3565-60SWX

Ref. No.	Description	Piece No.
U2	Assembly of Sidewalk Arm Complete with Wiring (Less Light) (Specify Length of Sidewalk Arm and Dimension "A")	3565-34SWX
U3	Assembly of Sidewalk Arm Complete (Less Wiring and Light) (Specify Length of Sidewalk Arm)	3565-60SWX
	REPLACEMENT PARTS	
1	Tongue	See Table
2	Base Board	See Table
3	Clip	3562-95
4	Washer Plate	3562-71
4A	Washer Plate	3562-72
5	Spacer Block	3562-98
5A	Spacer Block	3562-59
6	Through Stud	3562-66D
6A	Through Stud	3562-66H
7	Mach. Bolt, 3/8"16 x 3" Lg. sq. hd. stl., hex. Nut and two Plain Washers	
8	No. 18-2 Conductor Neoprene Covered Type "S" Cord (Specify Length)	
9	Mach. Bolt, 1/2"-13 x 2" Lg. hex. hd. stl., hex. Nut and Lock Washer	
10	Wood Screw No. 10 x 3/4" Lg. brass	
11	Assembly of Terminal Block Complete (For Details see Pages 3-14 and 3-15)	3561-196

Table

Specified Length of Gate Arm	Ref. No. 1	Ref. No. 2	Suggested Values For Dimension "A"
6'-0"	3562-57-2	3562-56-6	2'-2"
6'-6"	3562-57-2A	3562-56-6	2'-5"
7'-0"	3562-57-3	3562-56-6	2'-8"
7'-6"	3562-57-3A	3562-56-6	2'-11"
8'-0"	3562-57-4	3562-56-6	3'-2"
8'-6"	3562-57-4A	3562-56-6	3'-5"
9'-0"	3562-57-5	3562-56-6	3'-8"
9'-6"	3562-57-5A	3562-56-6	3'-11"
10'-0"	3562-57-6	3562-56-6	4'-2"
10'-6"	3562-57-6A	3562-56-6	4'-5"
11'-0"	3562-57-2	3562-58	4'-8"
11'-6"	3562-57-2A	3562-58	4'-11"
12'-0"	3562-57-3	3562-58	5'-2"
12'-6"	3562-57-3A	3562-58	5'-5"
13'-0"	3562-57-4	3562-58	5'-8"
13'-6"	3562-57-4A	3562-58	5'-11"
14'-0"	3562-57-5	3562-58	6'-2"
14'-6"	3562-57-5A	3562-58	6'-5"
15'-0"	3562-57-6	3562-58	6'-8"
15'-6"	3562-57-6A	3562-58	6'-11"
16'-0"	3562-57-7	3562-58	7'-2"
16'-6"	3562-57-7A	3562-58	7'-5"
17'-0"	3562-57-8	3562-58	7 -8"
17'-6"	3562-57-8A	3562-58	7'-11"
18'-0"	3562-57-9	3562-58	8'-2"

Hinged-Tongue Roadway Gate Arms

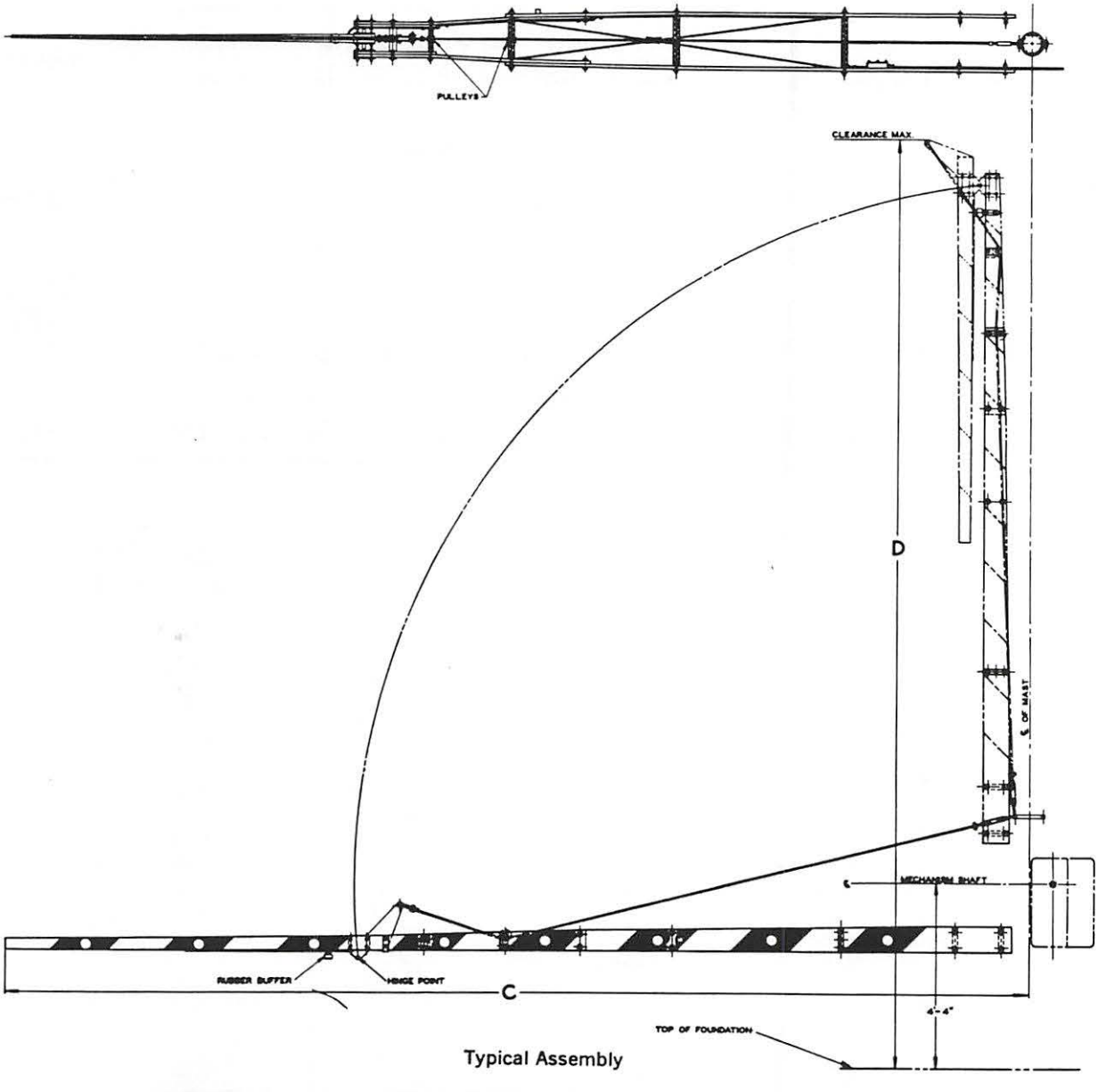
ENGINEERED AND CUSTOM BUILT TO MEET SPECIFIC REQUIREMENTS

Where overhead wires or structures would obstruct the gate arm in the raised, or clear, position it is often necessary to provide a special gate arm with a hinged tongue. Illustrated is a typical arm of this type.

Arms of 14′ to 44′, extended length, can usually be made to meet requirements if the clearance height does not necessitate a hinged tongue exceeding one-third of the total arm length.

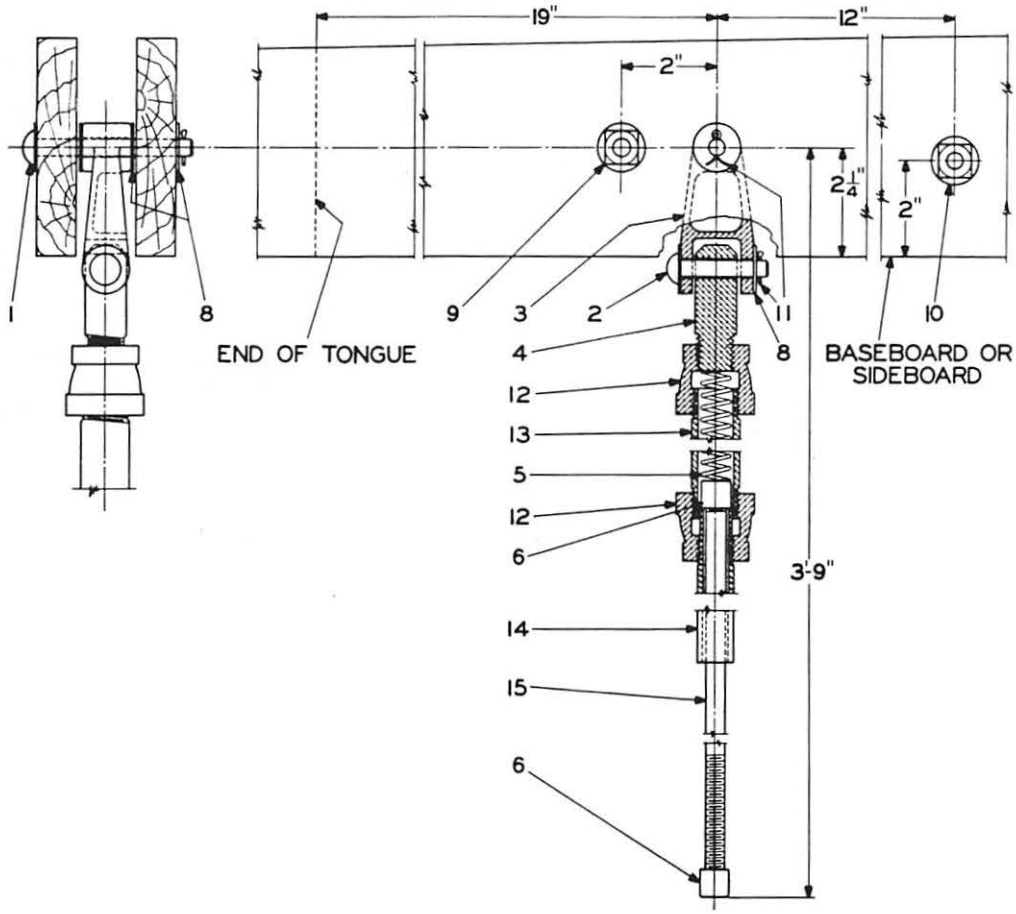
Given the specific requirements we will submit a drawing for consideration depicting a recommended design. To enable us to perfect a suitable design the dimensions "C" and "D" must, of course, be known. If the obstruction is not directly above the mast, but is out over the roadway, then the distance from the mast as well as the height of the obstruction above the top of the signal foundation must also be known.

No general replacement parts list for hinged-tongue gate arms can be compiled for cataloging. However, drawings are furnished with each arm supplied, from which replacement parts can be ordered, if required.



Typical Assembly

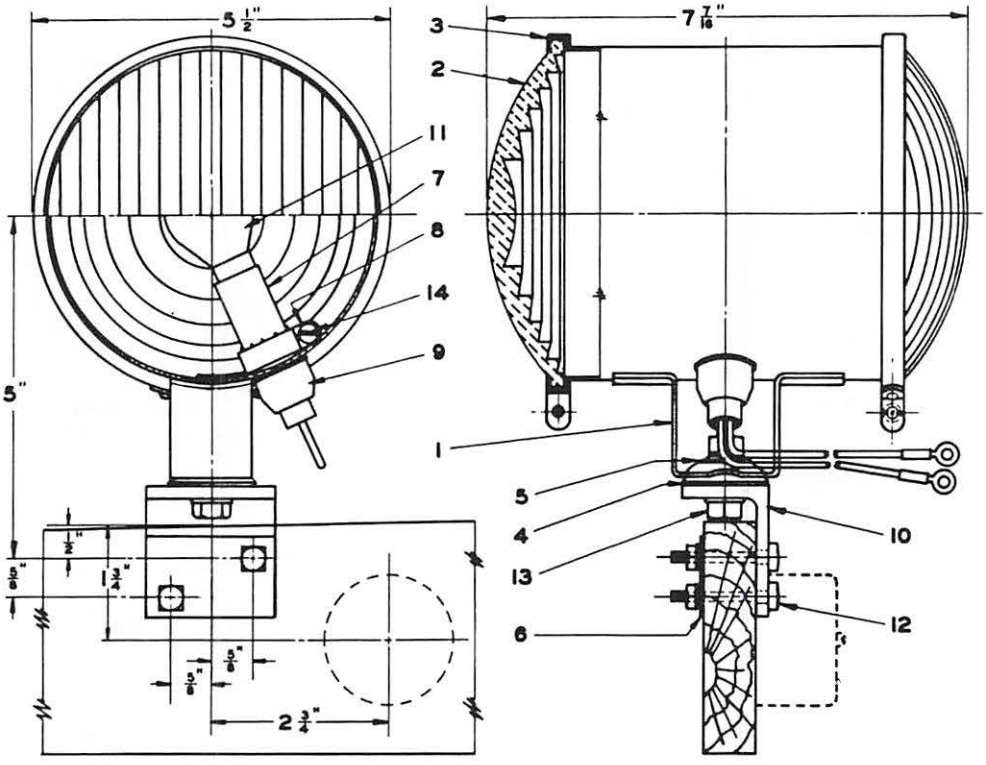
Buffer Leg
For Use With Roadway Arms 31' to 44' Long



Ref. No.	Description	Piece No.
X	Buffer Leg Assembly Complete	3562-316A
X1	Same as Ref. X, Less Ref. No. 9 & 10	3562-316
	REPLACEMENT PARTS	
1	Rivet, ⅜" x 3¼" Lg. stl	3562-133A
2	Rivet, ⅜" x 1⅞" Lg. stl	3562-133
3	Yoke	3562-117B
4	Plug	3562-317
5	Compression Spring	3562-318
6	Pipe Cap., stl	3562-319
8	Plain Washer, ⅜" I.D. x 1" O.D., stl	
9	Mach. Bolt, ⅜"-16 x 3½ "Lg., sq. hd., sq. nut and plain Washer, stl	
10	Through Stud, 5⅛" Lg., Aluminum	3562-66AK
11	Cotter Pin, 1/16" x ¾" Lg., stl	
12	Reducer, ¾" x ½", Aluminum	
13	Pipe Nipple, ¾" x 12" Lg. T.B.E. Aluminum	
14	Pipe, ½" x 4½" Lg. T.O.E. Aluminum	3562-326
15	Pipe, ¼" x 2'-5" Lg. Aluminum	3562-320

WESTERN-CULLEN-HAYES, Inc.

Gate Light—Type 1573-50
Two-Way Indication—5⅜" Diameter Lenses

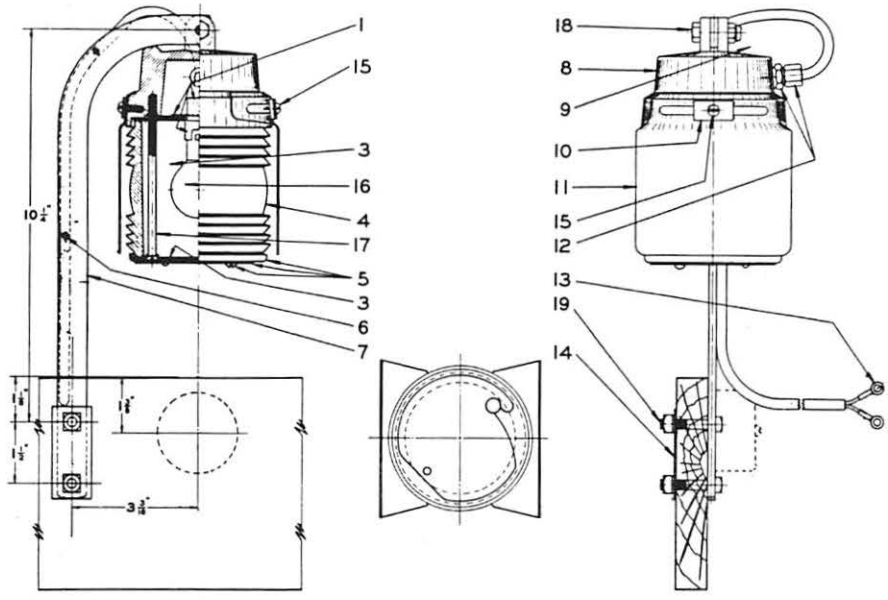


Ref. A

Type 1573-50 Gate Light is available with 30° Spreadlite or Optical Type Lenses. Horizontal and Vertical Alignment is adjustable. Aluminum construction limits weight at 2¼ lbs. S.C.B.B. lamp receptacle provided; lamp bulb not furnished unless specified.

Ref. No.	Description	Piece No.
T	Type 1573-50 Gate Light Complete, with 30° Spreadlite Lens (Red), Without Electric Lamp unless specified	1573-50
	REPLACEMENT PARTS	
1	Gate Light Body Assembly	1573-6
2	30° Spreadlite Lens, 5⅜" Diameter, Red	5330
3	Lens Ring	0500-106S-B
4	Adjusting Washer	1563-15
5	Washer, Steel	1563-16
6	Washer Plate	1563-5
7	Lamp Receptacle Assembly	6001-5
8	Clamp	1573-3
9	Insulator Bushing	1563-8
10	Mounting Bracket	1563-2A
11	Lamp, Incandescent, S.C.B.B., S-11 Bulb (Specify Voltage and Wattage)	
12	Mach. Bolt, ¼"-20 x 1½" Lg. sq. hd. steel and sq. nut	
13	Cap Screw, 5/16"-18 x 1¼" Lg. hex. hd. steel	
14	Mach. Screw, No. 8-32 x ⅝" Lg. rd. hd. brass and hex. nut	

Gate Light—Type 1585
Fresnel Lens

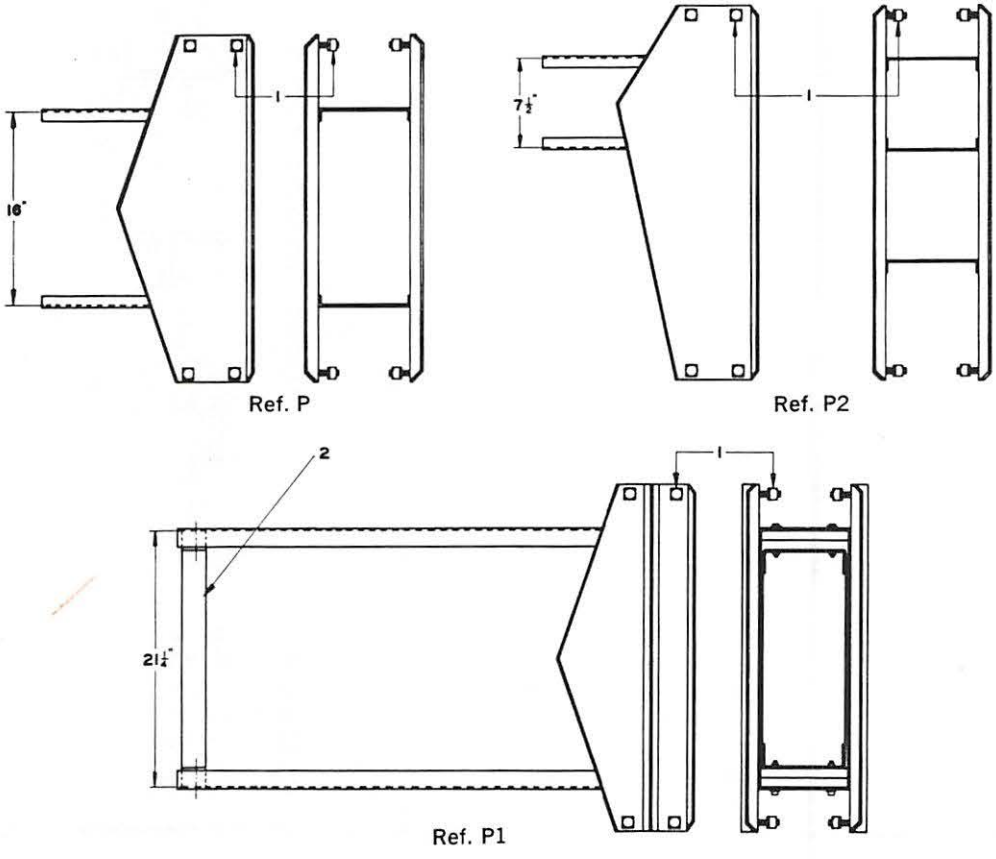


Type 1585 Gate Light is equipped with a 3⅝" diameter, red, 360° Fresnel Lens, shielded to provide indication to cross traffic only. A constant vertical axis is provided by the suspension mounting bracket. Wt. 2 lbs.; S.C.B.B. lamp receptacle; lamp bulb not furnished unless specified.

Ref. No.	Description	Piece No.
T2	Type 1585 Gate Light Complete with Mounting Bracket and Shields	1585
T3	Same as Ref. T2, Less Shields	1585-40
T4	Subassembly of Gate Light, with Shields, Less Mounting Bracket	1585-18AX
T5	Same as Ref. T4, Less Mounting Bracket and Shields	1585-40AX
T6	Subassembly of Mounting Bracket (Includes Items 6, 7, 14 and 19)	1585-15A
	REPLACEMENT PARTS	
1	Lamp Receptacle, Cord, Bracket Assembly	1585-12B
3	Gasket	1575-10
4	Fresnel Lens, 360°, Red, Plastic	1575-11P
5	Cover and Retaining Ring Subassembly	1585-11
6	Wire Retainer	1573-9
7	Mounting Bracket	1585-9
8	Housing	1585-3
9	¼"-20 Dualock Nut	90163
10	Shield Clamp	1585-7
11	Shield	1585-2
12	Compression Connector	1580-7
13	Terminal	31887
14	Washer Plate	1575-16
15	Mach. Screw, No. 10-24 x ½" Lg. rd. hd. brass	
16	Lamp, Incandescent, S.C.B.B., Type S-11 Bulb (Not furnished unless Specified)	
17	Stove Bolt, 3/16" (10-24) x 4" Lg. fl. hd. stl	
18	Pivot Screw	1585-14
19	Mach. Bolt, ¼"-20 x 1½" Lg. sq. hd., sq. nut and Internal Lockwasher	

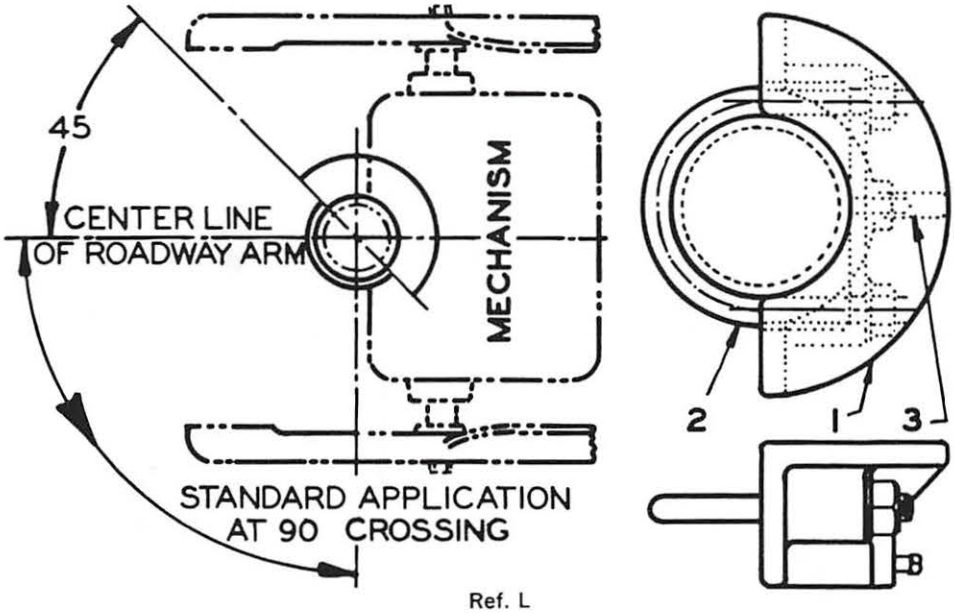
WESTERN-CULLEN-HAYES, Inc.

Gate Arm Support
For Model 10 Signals
Types 3565-105, 3565-105X, 3565-205



Ref. No.	Description	Piece No.
P	Gate Arm Support for use with Roadway Arms 14′ to 38′ Long Inclusive. (Includes Item 1)	3565-105
P1	Same as Ref. P, but for use with Roadway Arms 39′ to 44′ Long Inclusive. (Includes Items 1, 2, and shipping blocks)	3565-105X
P2	Same as Ref. P, but for use with Sidewalk Arms 18′ Long or Less. (Includes Item 1)	3565-205
	REPLACEMENT PARTS	
1	Mach. Bolt, ½″-13 x 1¾″ Lg. hex. hd., sq. nut and Lockwasher	
2	Inner Brace	3565-113

Mechanism Support
For Model 10 Signals
Type 3565-380A



Ref. L

Because, on occasion, only one man is available to service a gate mechanism or damaged gate arm, we offer our No. 3565-380A Mechanism Support illustrated above. One such support complete is furnished with each mechanism.

The device may be secured permanently to the mast, or carried as part of a maintainer's servicing equipment.

Procedure is as follows—

Attach support to mast and against the under side of the mechanism.

Loosen mechanism clamp bolts.

Remove ⅜" cap screws holding the conduit flange to the junction box base.

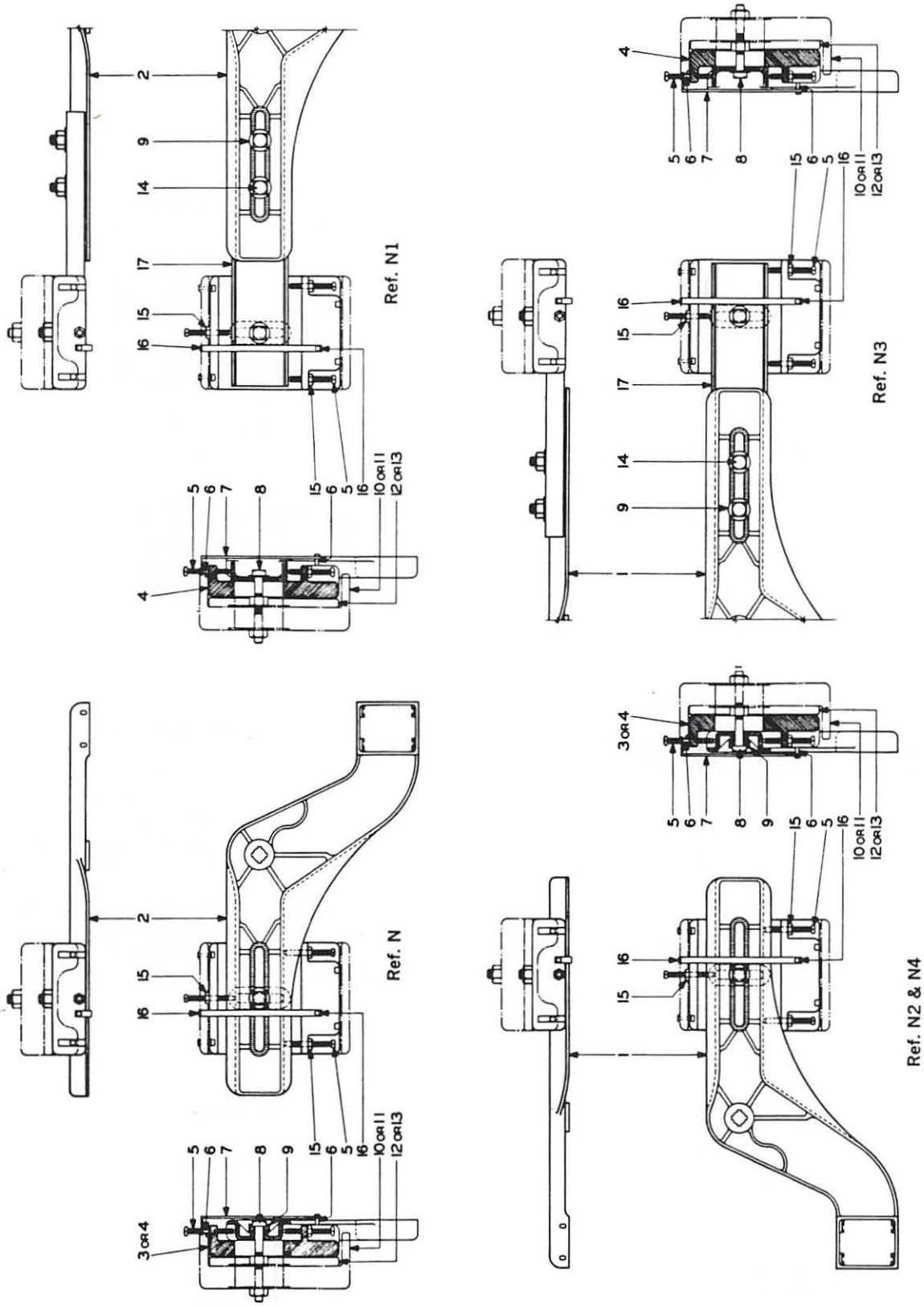
When traffic permits, open "Motor Up" and "Slot" circuits in Mechanism.

Swing mechanism and gate assembly away from tracks until arm is parallel to curb or highway edge.

After repair is completed, reverse procedure, being careful not to restore "Slot" and "Motor Up" wires until mechanism is restored to its normal position.

Ref. No.	Description	Piece No.
L	Mechanism Support Complete for 5" I.D. Pipe Mounting	3565-380A
	REPLACEMENT PARTS	
1	Mechanism Support only	3565-380
2	"U" Bolt for 5" I.D. Pipe Mounting	0700-276
3	Set Screw, ½"-13 x 1¾" Lg. sq. hd. Cup Pt. Stl	

Gate and Counterweight Arm For Model 10 Signals

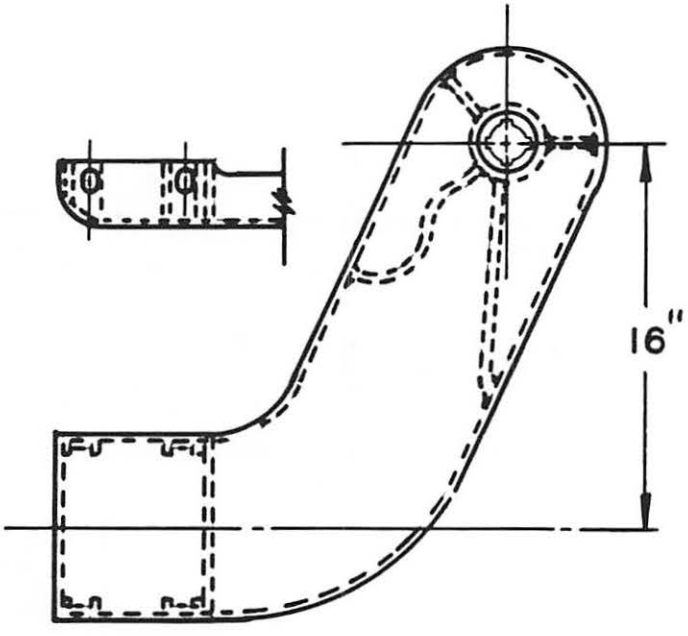


Gate and Counterweight Arm For Model 10 Signals

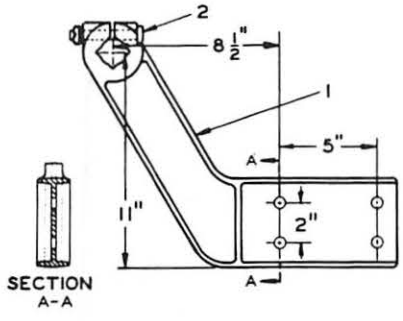
14' to 44'
3565-103R

Ref. No.	Description	Piece No.
N	Gate and Counterweight Arm Complete for roadway arms 25′ to 30′ Lg., Inclusive for left side of mechanism. Specify length of arm	3565-102L
N1	Same as Ref. N, but for 31′ to 44′ Lg. Gate Arm	3565-102L
N2	Same as Ref. N, but for Right side and for 14′ to 30′ Lg. Gate arms inclusive	3565-103R
N3	Same as Ref. N2, but for 31′ to 44′ Lg. Gate Arm	3565-103R
N4	Gate and Counterweight arm complete for sidewalk arms 18′ Lg. or less	3565-103RX
	REPLACEMENT PARTS	
1	Right Hand Counterweight Arm only	3565-103
2	Left Hand Counterweight Arm only	3565-102
3	Adjustable Counterweight Complete—85 lbs.	3562-236A
4	Adjustable Counterweight Complete—160 lbs	3562-226A
4A	Counterweight only—160 lbs.	3562-226
5	Set Screw, 5/8″-11 x 6″ Lg., sq. hd. Dog Point Stl.	3562-211
6	Sleeve	3562-232
7	Retaining Strap	3562-233
8	Counterweight Mounting Bolt 6″ Lg. with hex. nut and plain washer	3562-182-6
8A	Same as Ref. 8, but 7″ Lg.	3562-182-7
8B	Same as Ref. 8, but 8″ Lg.	3562-182-8
8C	Same as Ref. 8, but 9″ Lg.	3562-182-9
8D	Same as Ref. 8, but 10″ Lg.	3565-182-10
9	Clamp Washer	3565-104
10	Counterweight—100 lbs.	3562-229
11	Counterweight—200 lbs.	3562-230
12	Counterweight—25 lbs.	3562-228
13	Counterweight—50 lbs.	3562-227
14	Mach. Bolt, 1″-8 x 3½″ Lg. sq. hd. stl. and 2 plain washers	
15	Hex. Nut 5/8″-11, steel	
16	Cap Screw, 3/8″-16 x 1¾″ Lg., hex. hd. stl.	
17	Counterweight Extension Arm (For Ref. N1 and N3 only)	3565-174

Gate Support Arm and Sidewalk Arm Bracket For Model 10 Signals



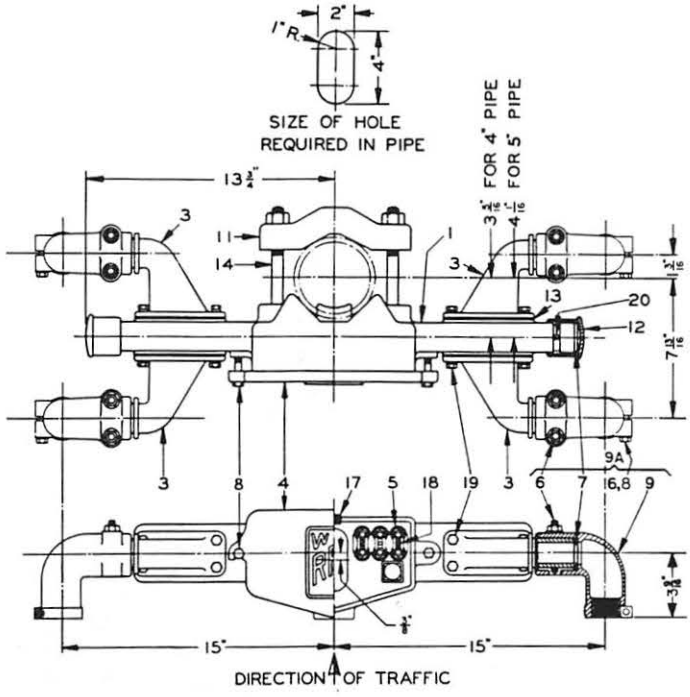
Ref. N5



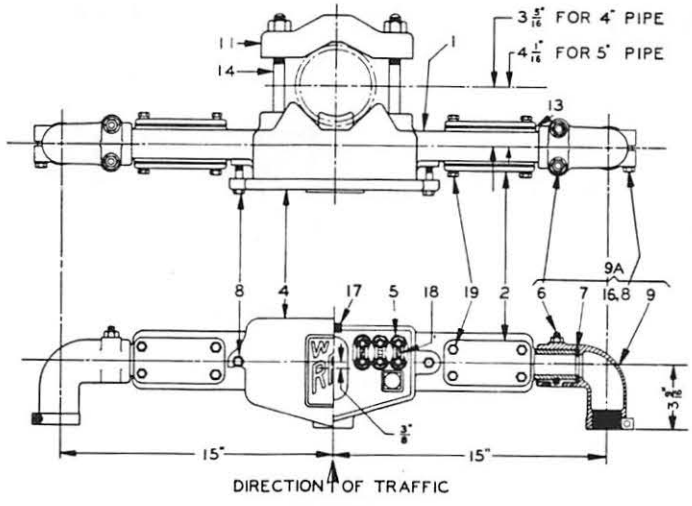
Ref. V

Ref. No.	Description	Piece No.
N5	Gate Support Arm Complete, for use with Roadway Arm 14′ to 24′ Long Inclusive	3565-101
V	Sidewalk Arm Bracket Complete, for use with Sidewalk Arm 18′ Long or Less	3565-111
	REPLACEMENT PARTS	
1	Sidewalk Arm Bracket (Casting only)	3565-111A
2	Mach. Bolt, ½"-13 x 3½" Lg. sq. hd. stl., hex. nut and Lock Washer	

Junction Box Cross Arm For Two-Way Indication Type 960-3 and 5



Ref. E



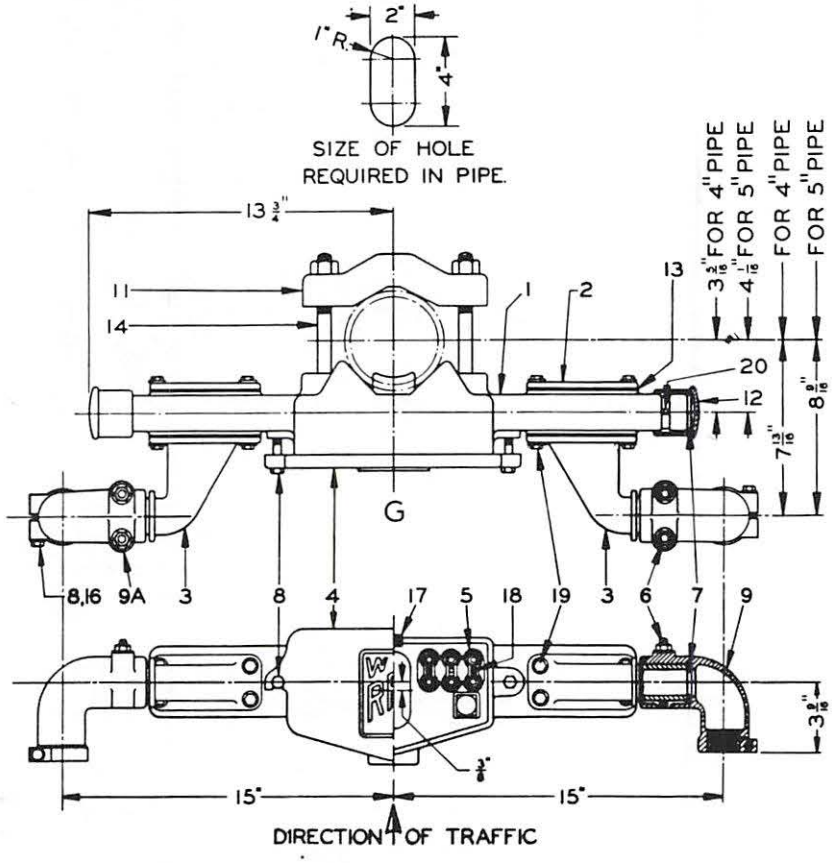
Ref. E1

Ref. No.	Description	Piece No.
E	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units. (Specify Pipe Size)	960-5
E1	Same as Ref. E but for Two Light Units	960-3

For Replacement Parts Listing see Pages 3-44 and 3-45.

WESTERN-CULLEN-HAYES, Inc.

Type 960-83 Junction Box Cross Arm For One-Way Indication

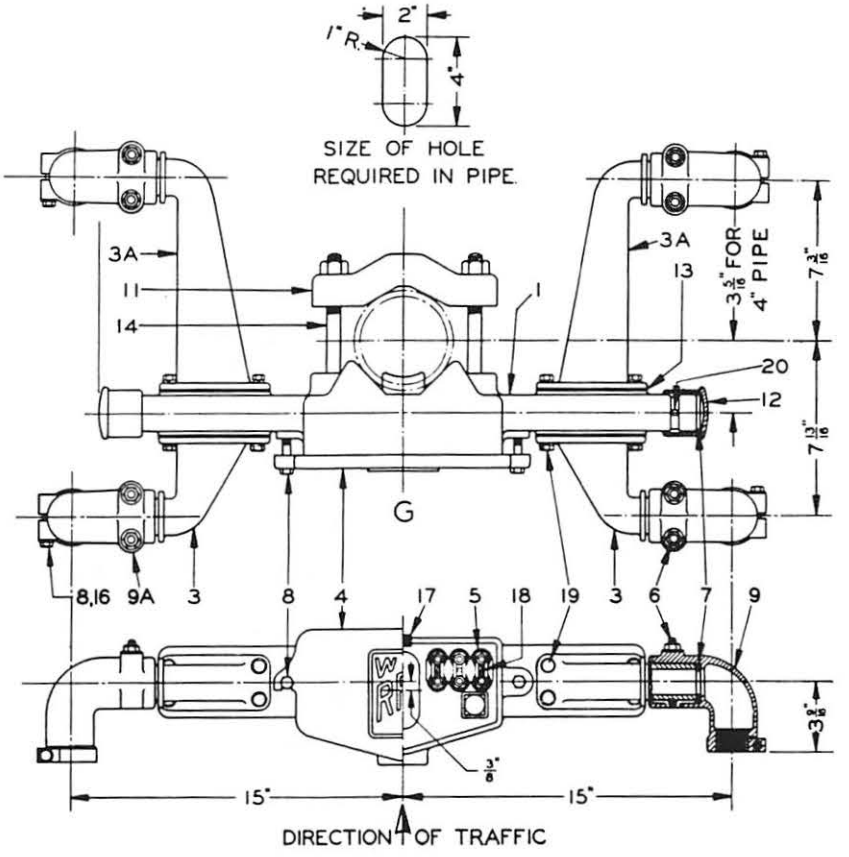


Ref. E2

Ref. No.	Description	Piece No.
E2	Junction Box Cross Arm Assembly for Mounting Two 970-201 Light Units. (Specify Pipe Size)	960-83

For Replacement Parts Listing see Pages 3-44 and 3-45.

Type 960-88 Junction Box Cross Arm For Two-Way Indication

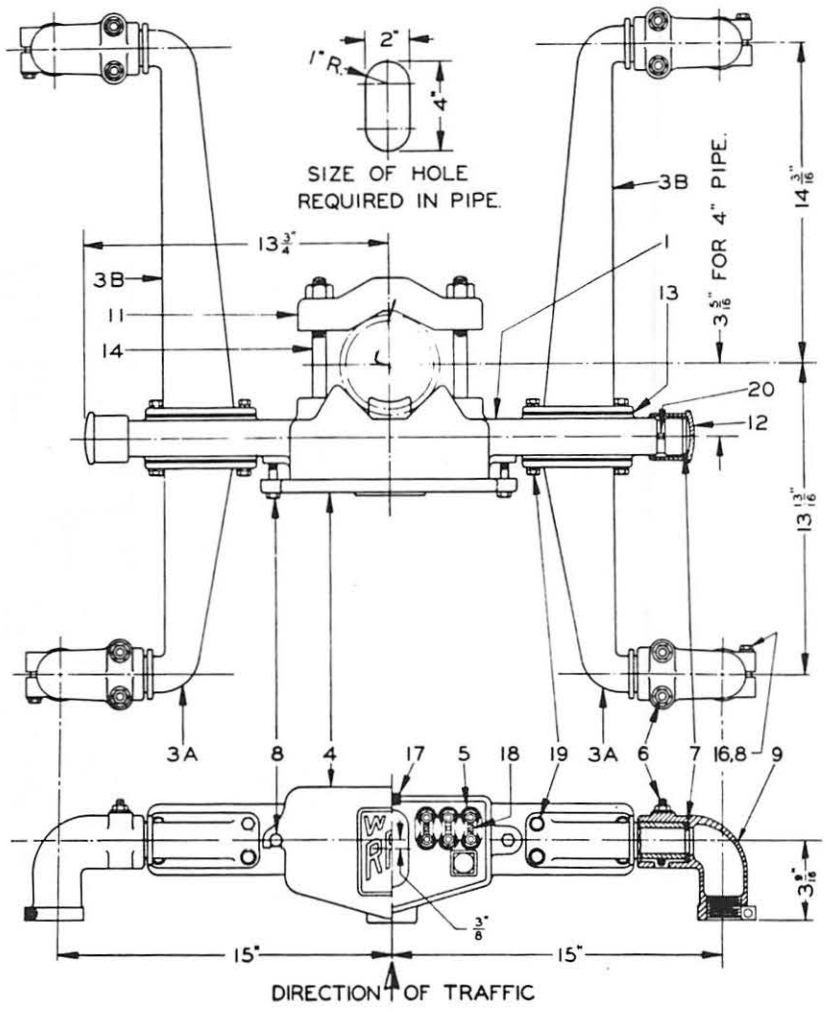


Ref. E3

Ref. No.	Description	Piece No.
E3	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units. (Specify Pipe Size)	960-88

For Replacement Parts Listing see Pages 3-44 and 3-45.

Type 960-5XX Junction Box Cross Arm For Two-Way Indication

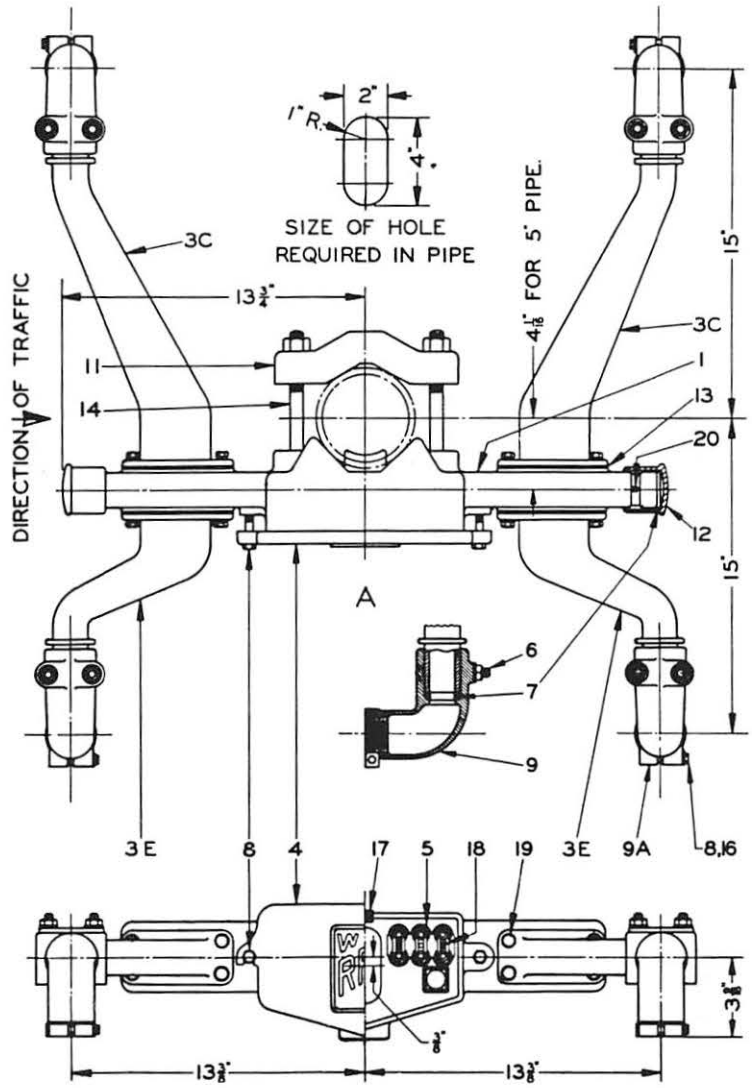


Ref. E4

Ref. No.	Description	Piece No.
E4	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units (For 4" I.D. Pipe Mounting)	960-5XX

For Replacement Parts Listing see Pages 3-44 and 3-45.

Type 960-54 Junction Box Cross Arm For Two-Way Indication

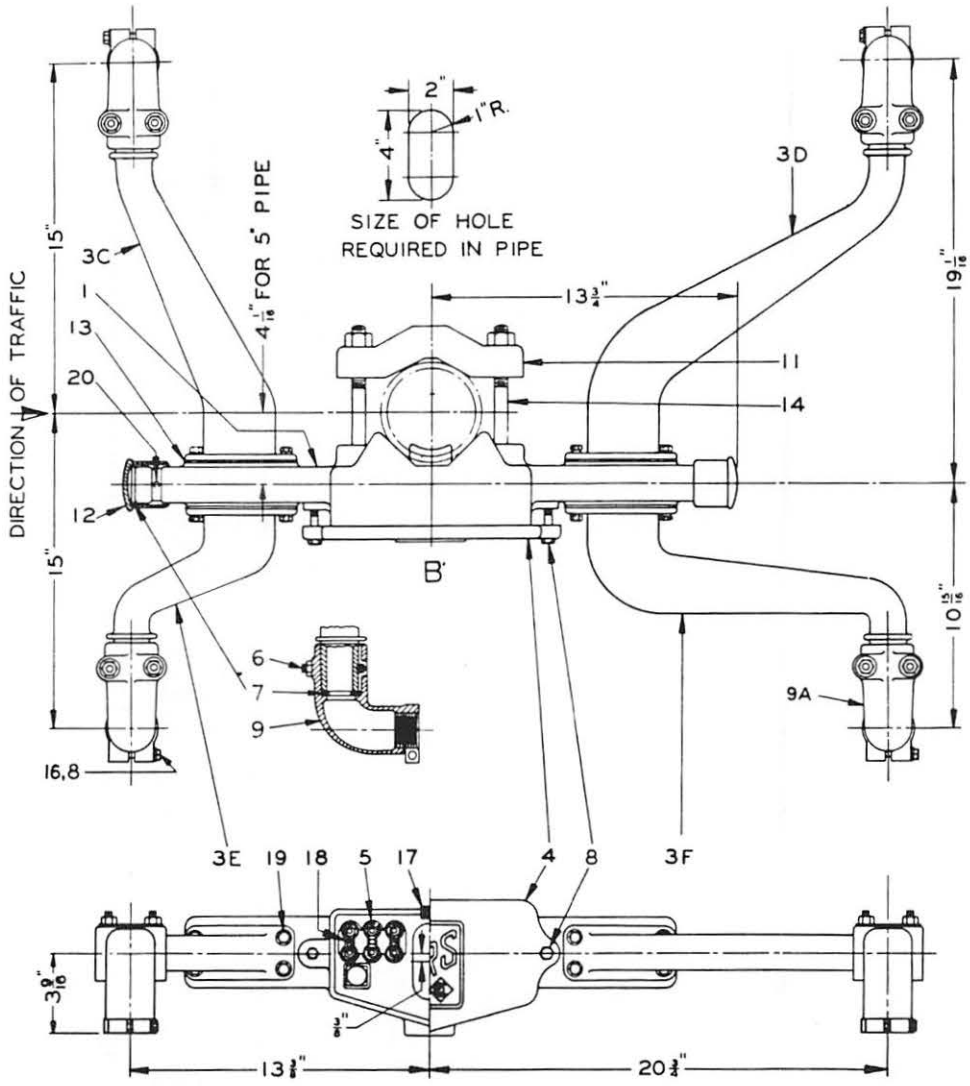


Ref. E5

Ref. No.	Description	Piece No.
E5	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units (For 5" I.D. Pipe Mounting)	960-54

For Replacement Parts Listing see Pages 3-44 and 3-46.

Type 960-74R Junction Box Cross Arm For Two-Way Indication

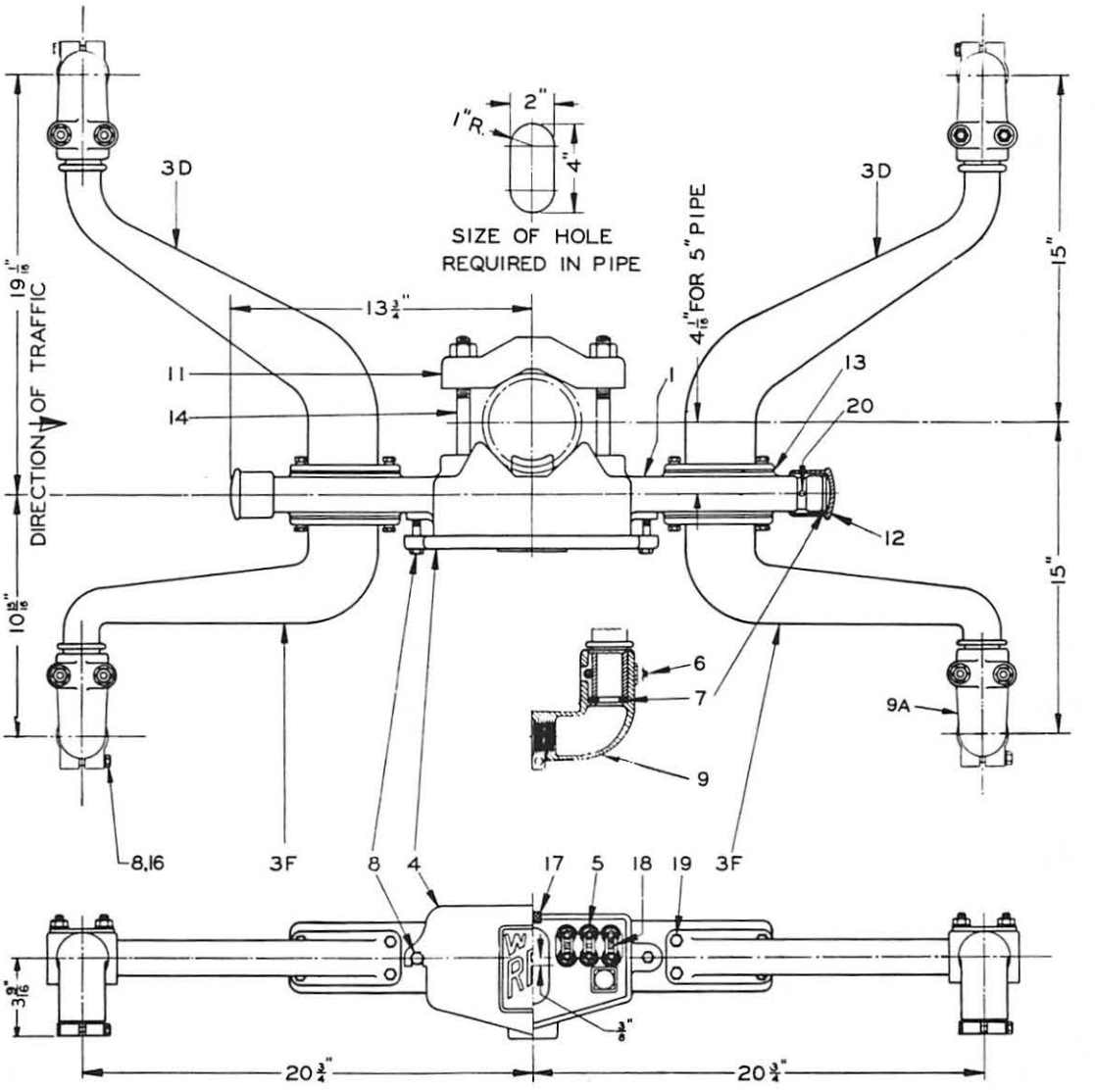


Ref. E6

Ref. No.	Description	Piece No.
E6	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units (For 5" I.D. Pipe Mounting)	960-74R

For Replacement Parts Listing see Pages 3-44 and 3-45.

Type 960-84 Junction Box Cross Arm For Two-Way Indication



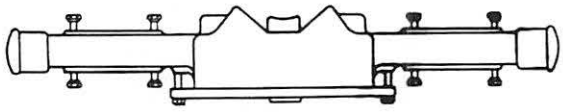
Ref. E7

Ref. No.	Description	Piece No.
E7	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units (For 5" I.D. Pipe Mounting)	960-84

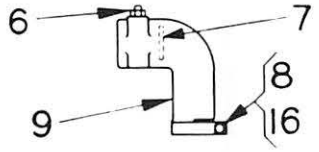
For Replacement Parts Listing see Pages 3-44 and 3-45.

Junction Box Cross Arms

REPLACEMENT PARTS LISTING FOR PAGES 3-37 TO 3-43



E 8



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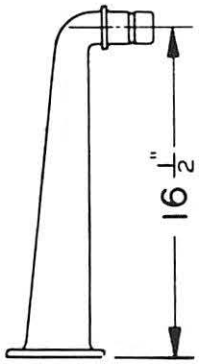

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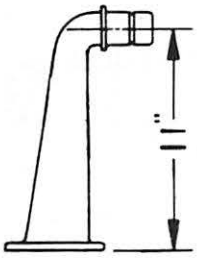

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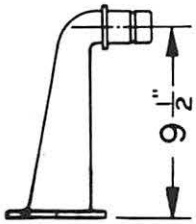

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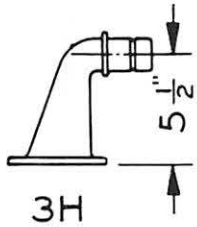

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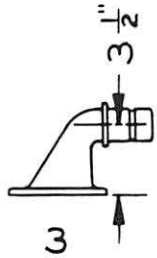

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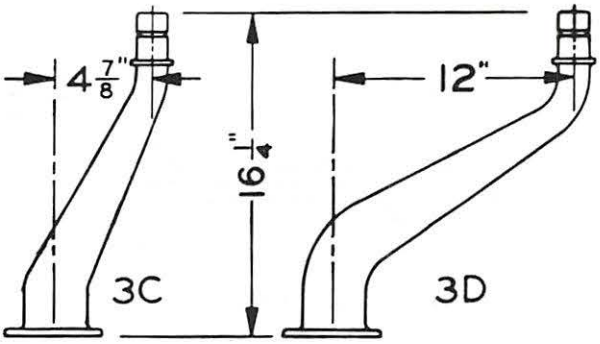
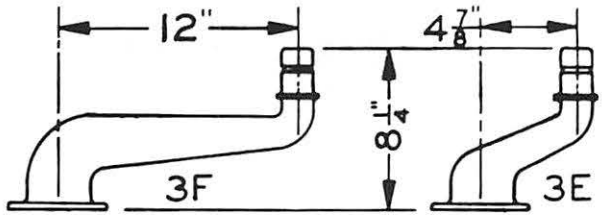


3C 3D



3F 3E

Junction Box Cross Arms

REPLACEMENT PARTS LISTING FOR PAGES 3-37 TO 3-43

Ref. No.	Description	Piece No.
E8	Sub-assembly of Junction Box Cross Arm (Includes Items 1, 4, 5, 7, 12, 15, 16, 18, 19 and 20)	950A-62
E9	Sub-assembly of Supporting Bracket (Includes Items 6, 7, 8, 9 and 16)	960A-163
	REPLACEMENT PARTS	
1	Junction Box Cross Arm (Casting only)	950A-22
2	Cover Plate	950A-39
3	Bracket 3½"	950A-57
3A	Bracket 9½"	950A-47
3B	Bracket 16½"	950A-46
3C	Bracket 16¼" x 4⅞"	950A-67
3D	Bracket 16¼" x 12"	950A-77
3E	Bracket 8¼" x 4⅞"	950A-66
3F	Bracket 8¼" x 12"	950A-76
3G	Bracket 11"	950A-37
3H	Bracket 5½"	950A-36
4	Cover, Complete with Packing	950A-21
5	Terminal Block, Complete	2506-106
6	"U" Bolt, ⅜"-16, Complete with Nuts	950-31
7	Gasket, Sponge Rubber	950-28
8	Cap Screw, ⅜"-16 x 2" Lg. hex. hd., stl.	
9	Supporting Bracket	960A-131
11	Adaptor Clamp	950A-34
12	Cap	950A-29
13	Gasket, Cork	950-27
14	Mach. Bolt, ⅝"-11 x 7½" Lg. sq. hd. stl. and hex. nut for 5" Pipe Mounting	
14A	Same as Ref. 14, but for 4" Pipe Mounting	
16	⅜" Lock Washer	
17	Torchwick Packing ⅜" Dia. x 27" Lg.	
18	Mach. Screw, No. 10-32 x ⅝" Lg. fil. hd., stl.	
19	Cap Screw, ⅜"-16 x ⅞" Lg. hex. hd.. stl. and Lock Washer	
20	Set Screw, ¼"-20 x ½" Lg., sq. hd. Cup Pt., stl.	

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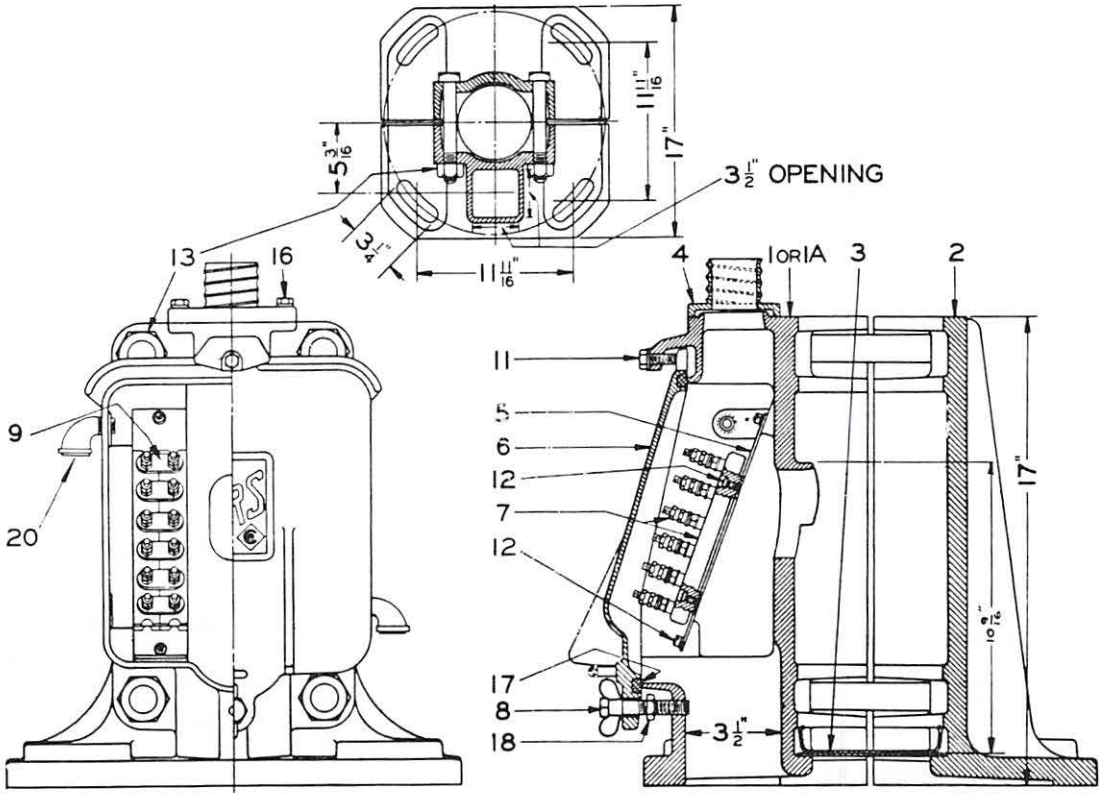
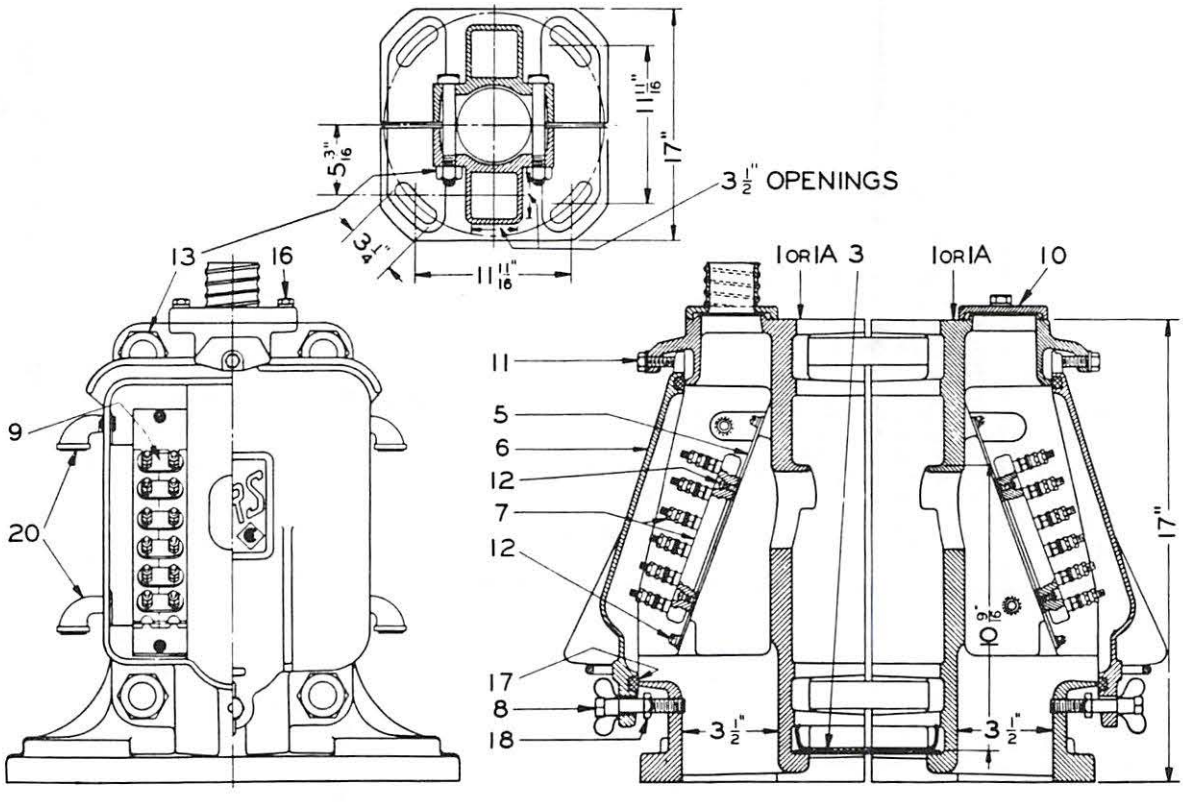
Type 2149 Junction Box Clamp Type Base



Ref. B9



Ref. B11

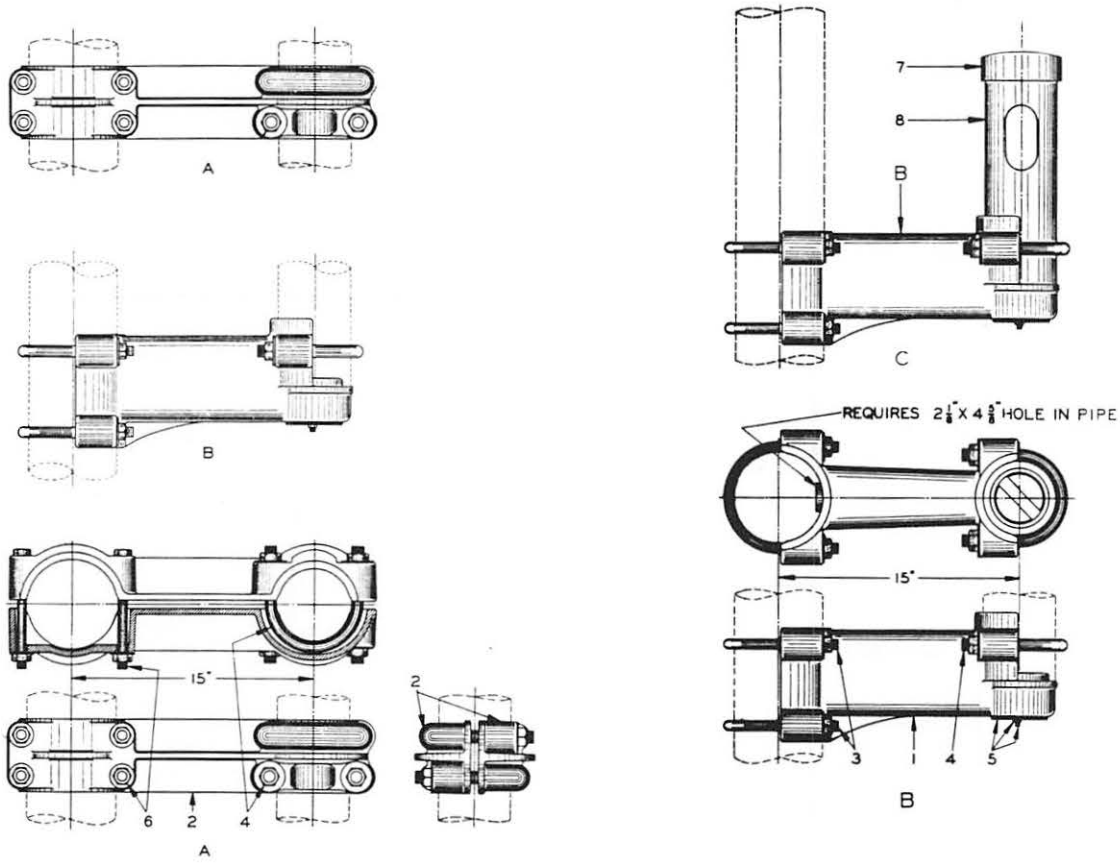
Type 2149 Junction Box Clamp Type Base

Type 2149 Bases are regularly furnished with conduit flange (Ref. 4) for 1½" flexible metalic conduit unless specified for 2" conduit. A cover (Ref. 10A) tapped 1½" pipe thread is furnished for "sealtite" connector.

Ref. No.	Description	Piece No.
B9	Type 2149 Split base with one Junction Box half with 24 binding posts, ventilators and conduit flange. (Cast Iron)	2149-111C
B10	Same as Ref. B9, less ventilators	2149-111
B11	Same as Ref. B9, but with two Junction Box halves	2149-112E
B12	Same as Ref. B11, less ventilators	2149-112
	REPLACEMENT PARTS	
1	Junction Box Half, (Without Terminals, Cover, Ventilators and Fittings, for Ref. B10 and B12)	2149-15
1A	Same as Ref. 1, but for Ref. B9 and B11	2149-15C
2	Split Base Half	2149-13
3	Pipe Shield	2149-24
4	Conduit Flange for 1½" Conduit	2149-117
4A	Conduit Flange for 2" Conduit	2149-17
5	Terminal Mounting Plate	2149-25
6	Cover with Packing Ref. 17	2149-16
7	Terminal Strip (12 post)	2508-106
8	Thumb Screw	2149-18A
9	Connector	7323-2
10	Blank Cover	2149-22
10A	Cover Plate, tapped 1½" pipe thread	2149-22G
11	Cap Screw, ⅜"-16 x ⅞" Lg. hex. hd. stl. and plain washer	
12	Mach. Screw, ¼"-20 x ⅝" Lg. fil. hd. stl.	
13	Mach. Bolt, 1"-8 x 7½" Lg. sq. hd. stl. and hex. nut	
14	Pipe Plug, ¾" Std.	
15	Pipe Reducer Bushing, 1¼" x ¾" Std.	
16	Cap Screw, ⅜"-16 x 1⅛" Lg., hex. hd., stl. and lock washer	
17	Packing, Flax or Jute, ⅜" sq. x 3'-2½" Lg.	
18	Hex. Jam Nut, ½"-13 Std., stl.	
19	Pipe Plug, 1¼" Std.	
20	Ventilator	1143-16

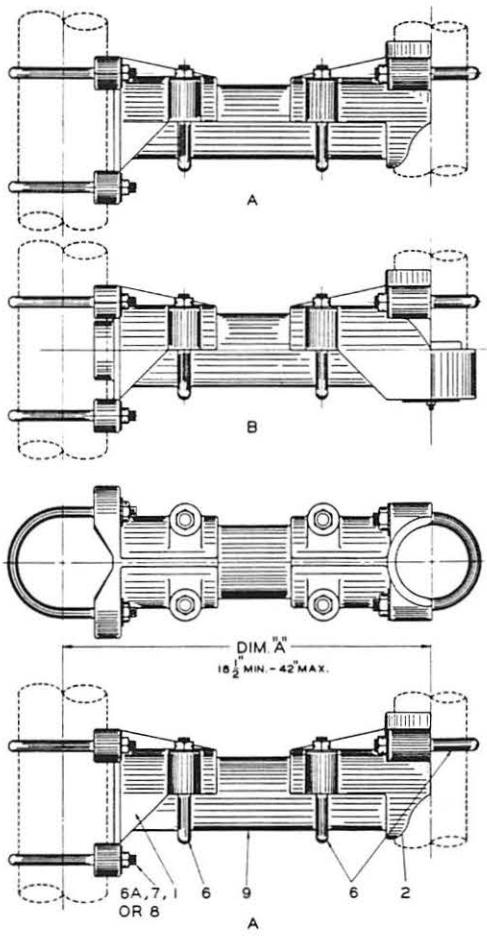
WESTERN-CULLEN-HAYES, Inc.

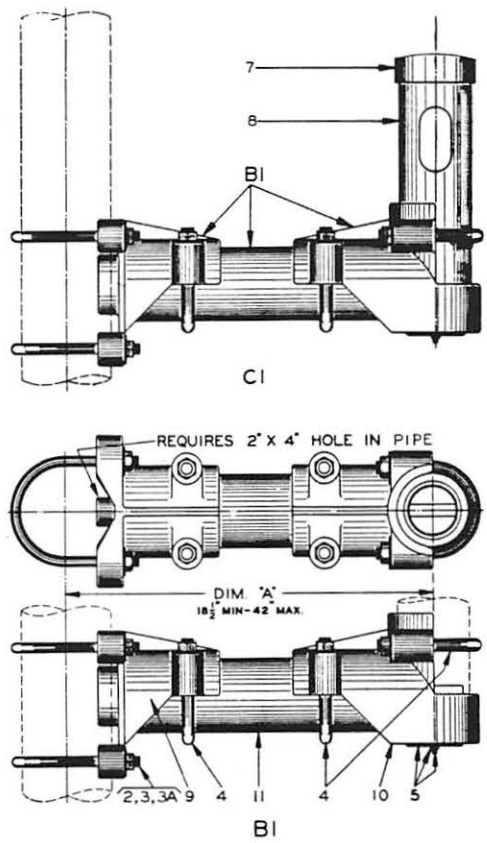
Upper and Lower Supporting Brackets For Offset Mast Type Model 10 Signals Type 3565-65 Type 3565-67 Type 3565-367



Ref. No.	Description	Piece No.
A	Upper Supporting Bracket Assembly	3565-65
B	Lower Supporting Bracket Assembly	3565-67
C	Supporting Bracket and Dowel Mast Assembly	3565-367
	REPLACEMENT PARTS	
1	Upper Bracket Casting Only	3565-69
2	Upper Bracket Casting Only	3565-68
3	"U" Bolt for 5" I.D. Pipe	1264-5
4	"U" Bolt for 4" I.D. Pipe	3565-163
5	Wire Opening Cover and Clamp Subassembly	3565-162A
6	Mach. Bolt, ⅝"-11 x 7" Lg. Sq. Hd. Steel, Hex. Steel Nut and Plain Washer	
7	Tap-on Pinnacle	110A-6
8	Dowel, 4" I.D. x 14" Lg. (May be turned in Socket to any Angle)	714-8

Upper and Lower Supporting Brackets For Offset Mast Type Model 10 Signals Type 3565-165 Type 3565-167 Type 3565-267

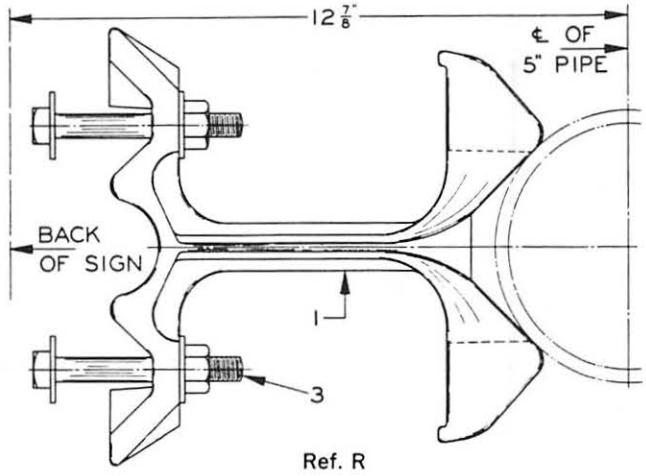




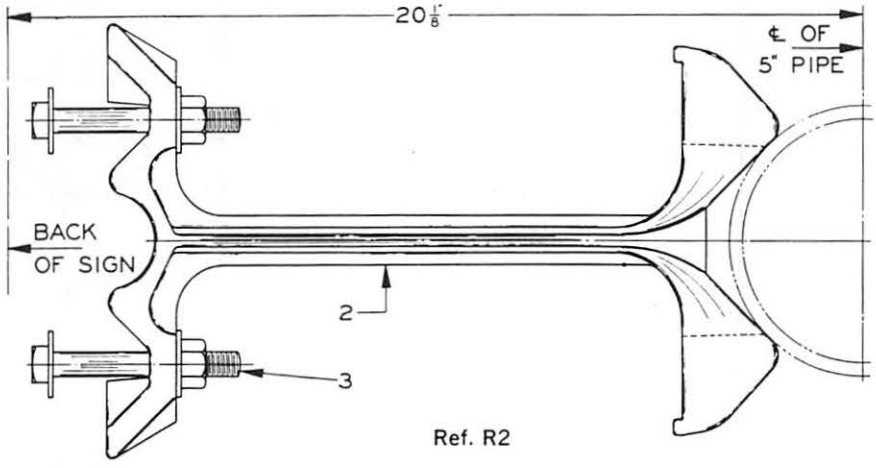
Ref. No.	Description	Piece No.
A	Upper Supporting Bracket Assembly (Specify Dimension "A" in inches)	3565-165
B	Lower Supporting Bracket Assembly (Specify Dimension "A" in inches)	3565-167
C	Supporting Bracket and Dowel Mast Assembly (Specify Dimension "A" in inches)	3565-267
	REPLACEMENT PARTS	
1	Inner Support	3565-169
2	Outer Support	3565-164
3	Inner Support	3565-168
4	Outer Support	3565-166
5	Wire Opening Cover and Clamp Sub-Assembly	3565-162A
6	"U" Bolt for 4" I.D. Pipe	3565-163
6A	"U" Bolt for 4" I.D. Pipe	1264-4
7	"U" Bolt for 5" I.D. Pipe	1264-5
8	"U" Bolt for 6" I.D. Pipe	1264-6
9	Pipe, 4" I.D. (Length as Required)	
10	Dowel, 4" I.D. x 14" Lg. (May be turned in Socket to any Angle)	714-8
11	Tap-on Pinnacle	110A-6

WESTERN-CULLEN-HAYES, Inc.

Extension Brackets For Crossing Signs Type 3366-40 Type 3366-140

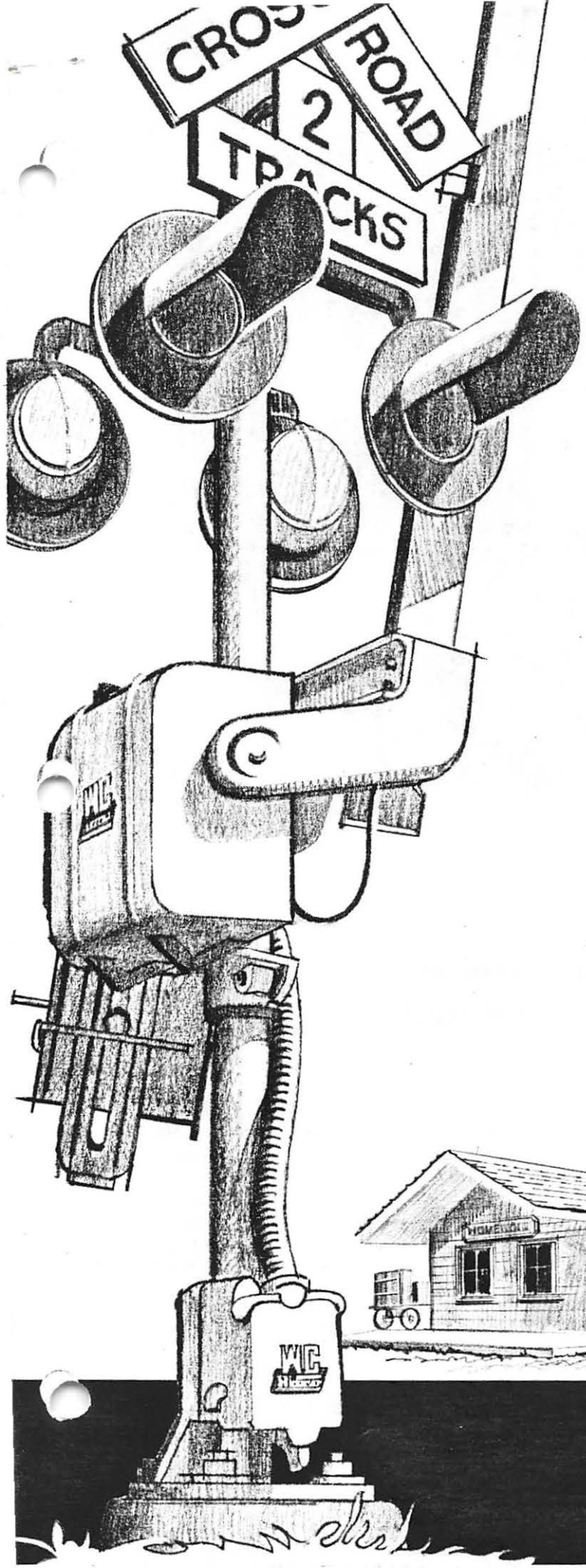


Ref. R



Ref. R2

Ref. No.	Description	Piece No.
R	Type 3366-40 Extension Bracket (Cast Iron) Complete with Bolts, Nuts and Washers	3366-40
R1	Same as Ref. R, but aluminum	3366A-40
R2	Type 3366-140 Extension Bracket (Cast Iron) Complete with Bolts, Nuts and Washers	3366-140
R3	Same as Ref. R2, but aluminum	3366A-140
	REPLACEMENT PARTS	
1	Extension Bracket, gray iron casting only	3366-41
1A	Same as Ref. 1, but aluminum casting	3366A-41
2	Extension Bracket, gray iron casting only	3366-141
2A	Same as Ref. 2, but aluminum casting	3366A-141
3	Mach. Bolt, ½"-13 x 4" Lg., sq. hd., stl., hex. nut and 2 Plain Washers	



WESTERN · CULLEN · HAYES

model 10 signal featuring the 3590 series gate mechanism

a quality, long life mechanism
you can depend on for maximum
reliability & minimum maintenance

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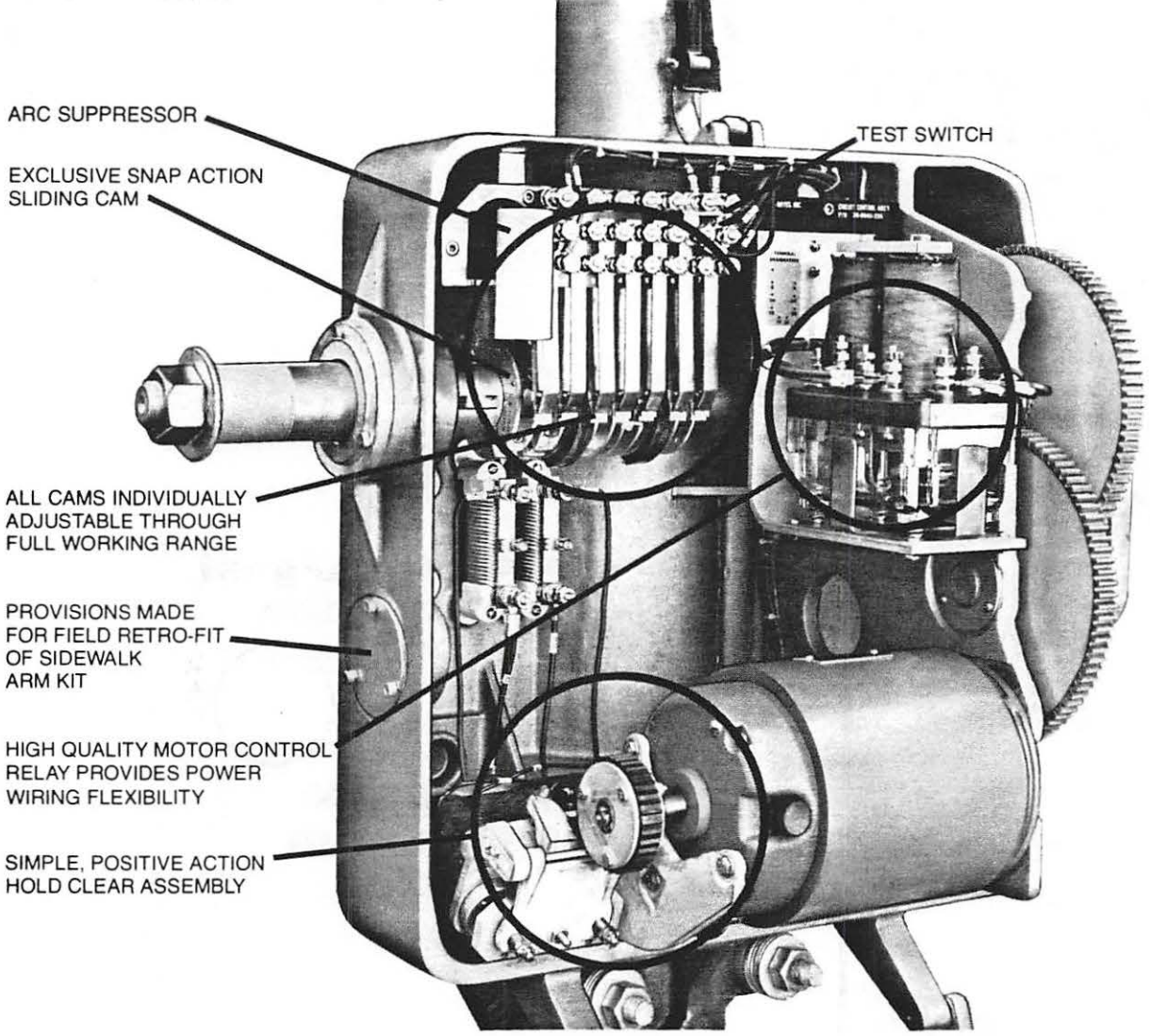


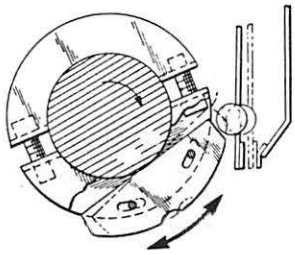
WESTERN·CULLEN·HAYES

3590 series gate mechanism

COMBINES MAXIMUM RELIABILITY, MINIMUM MAINTENANCE AND LONG LIFE

- Space for seven heavy duty contacts and cams. Motor control cam has exclusive sliding action—minimizes gate arm pumping and contact burning. All cams are adjustable thru their full working range and can be adjusted while in their working position.
- Arc Suppressor further reduces contact burn.
- Fast clear time—means less gate arm breakage.
- Easy to service, all parts are readily accessible. Cover swings out of way for inspection.
- High quality Motor Control Relay provides power wiring flexibility. This feature permits replacing other type mechanisms with a 3590 mechanism when the wiring is already in place.
- "Flame Hardened" steel gear teeth—minimizes damage to gears if arm is broken; increases life, reduces maintenance. Intermediate gears are interchangeable.
- Sidewalk shaft—can be factory or field installed.
- Interchangeable parts—reduces parts inventory.
- All bearings are pre-lubricated and sealed—reduces maintenance and wear.
- Easily adjustable horizontal and vertical stops.
- Circuit diagram permanently affixed to inside cover.

EXCLUSIVE MOTOR CONTROL SNAP ACTION SLIDING CAM U.S. Patent No. 4057208



Reduces the possibility of gate arm pumping—minimizes contact burning. All other cams are interchangeable. Cam slides forward to allow arm to raise to proper position, then snaps backward allowing fast contact opening. This helps eliminate arcing and pumping.

ARC SUPPRESSOR

Further reduces burn on motor-up contact.

INDIVIDUALLY ADJUSTABLE CAMS

Allows greater flexibility to adjust arm travel and positioning. Spare cams and contacts allow variety of field wiring options to meet individual requirements.

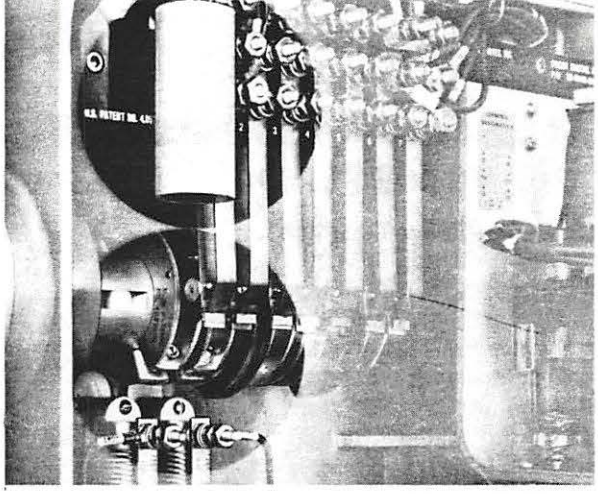
MOTOR CONTROL RELAY

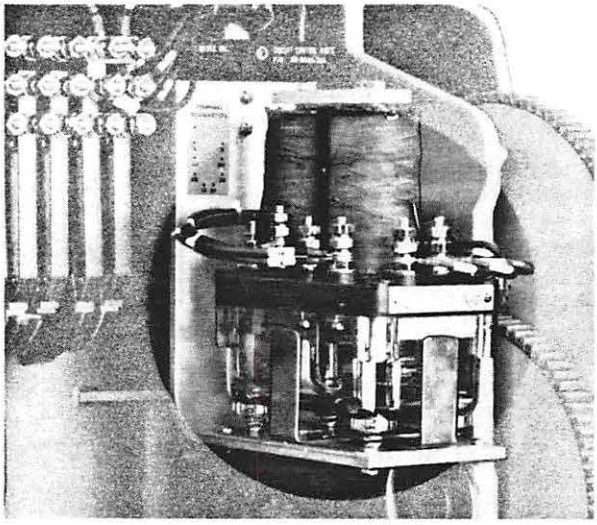
3590 and 3593 versions are determined by this relay and minor wiring changes. 3590 accommodates three power wires. 3593 allows use of two power wires—power down control is switched through this safety grade relay. The relay is energized with gate in the up position.

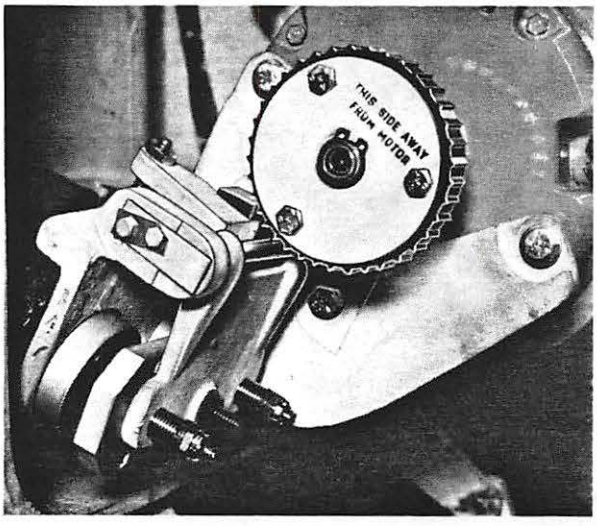
HOLD CLEAR ASSEMBLY

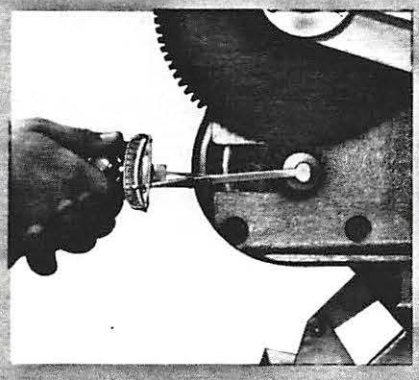
The single most important sub-assembly—ensures reliability.

Non-dragging Pawl and Ratchet Wheel reduces wear. The One Way Ramp and Roller Mechanical Clutch ensure positive stop. Reversible Pawl reduces maintenance costs. Non-locking angles between Pawl and Ratchet Wheel provide increased safety.







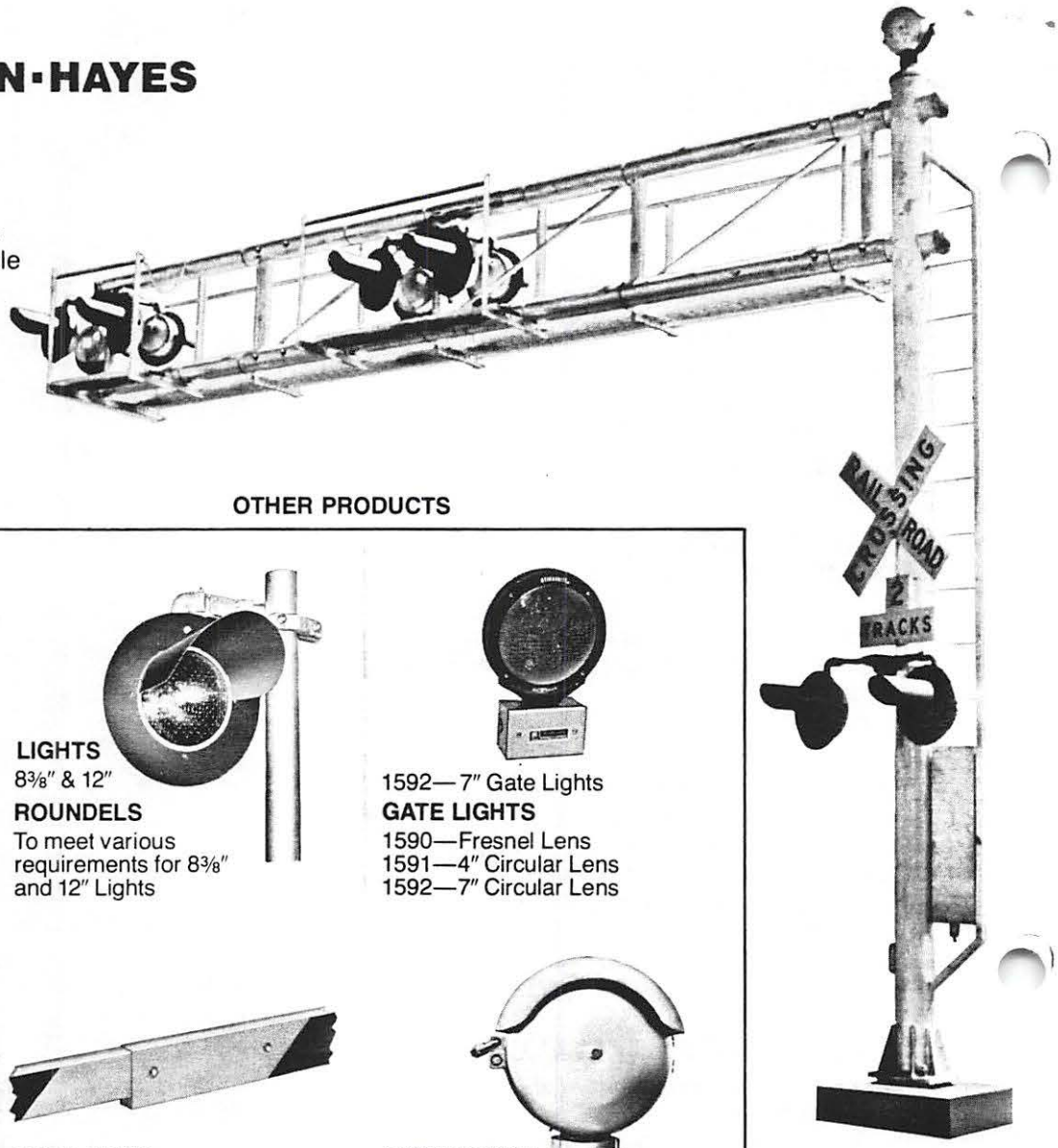


OPTIONAL PRODUCTS

- W-C-H Torque Wrench permits making quick and easy torque measurements. The Wrench is calibrated directly in foot-pounds (referenced to the main shaft), eliminating the need for coversion charts. Measuring can be accomplished from the ground by one man.
- Tool Kits—Maintainers and Installer/Supervisor.
- Sidewalk shaft—installed at factory or provision to install in field.
- Variety of Gate Arms.
- Heater.
- Spring Scale—for torque measurements.
- All Temperature Gear Grease.

WESTERN·CULLEN·HAYES
signal products

Western-Cullen-Hayes has more than 80 years of experience in Highway-Crossing equipment, plus a reputation for the most dependable products in the field. In addition to our 3590 Series Gate mechanisms and our Model 10 Crossing Signal, we can meet your needs with other Signaling products.



GATE MECHANISM ORDERING REFERENCES

3590-131 3 Power Wire Control
3593-131 2 Power Wire Control
3590-132 3 Power Wire Control with sidewalk shaft
3593-132 2 Power Wire Control with sidewalk shaft

ACCESSORIES

3590-K9 Vertical Torque Wrench Kit
3562-210 Torque Adjusting Scale
38-0045-287 Heater
3590-1650 All Temp. Lubricating Grease for Gears

OTHER PRODUCTS

LIGHTS
8⅜" & 12"

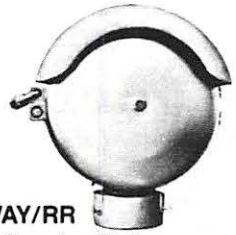
ROUNDELS
To meet various requirements for 8⅜" and 12" Lights

1592—7" Gate Lights

GATE LIGHTS
1590—Fresnel Lens
1591—4" Circular Lens
1592—7" Circular Lens

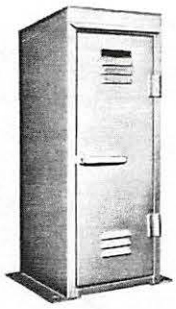
SIGNS
Cross Buck
No. of Track
Advance Warning Sign

GATE ARMS
Wooden
Fiberglass
Aluminum/Fiberglass Combination
Breakaway Adapters

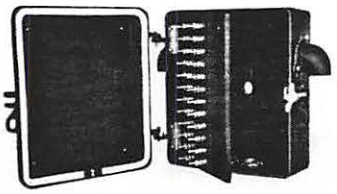


HIGHWAY/RR
0333—Crossing Bell

CROSSING WARNING SYSTEMS
Material, Engineering, or Completely Wired Cases



OTHER PRODUCTS
Lighting Transformers
Rectifiers
Terminal Strips
Lightning Arresters
Test Instruments
Rail Bonding Drills and Bits
Track Drills and Bits



TERMINAL BOXES
Fiberglass Battery Boxes
Pole Mount Instrument Cases
Pole Mount Terminal and Arrester Boxes

OTHER W-C-H SIGNAL SUPPORT STRUCTURES

Walkout Cantilever pictured above meets applicable AAR & AASTHO Specifications.

Rotatable Cantilever meets AAR Recommendations.

Signal Bridges —Standard or Custom designs.

Flashing Light Signals —Standard of the industry for many years.

For further information write or call 312/254-9600 or your W-C-H Representative.

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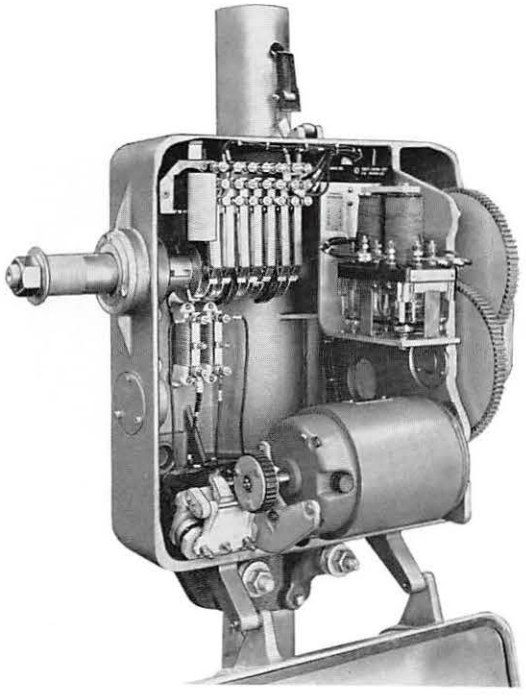
Telephone: 312/254-9600 • Telex 25-3206

Printed in U.S.A.

M M882

3590 SERIES
CROSSING GATE MECHANISM
and Replacement Parts



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Counter Kit	3-222

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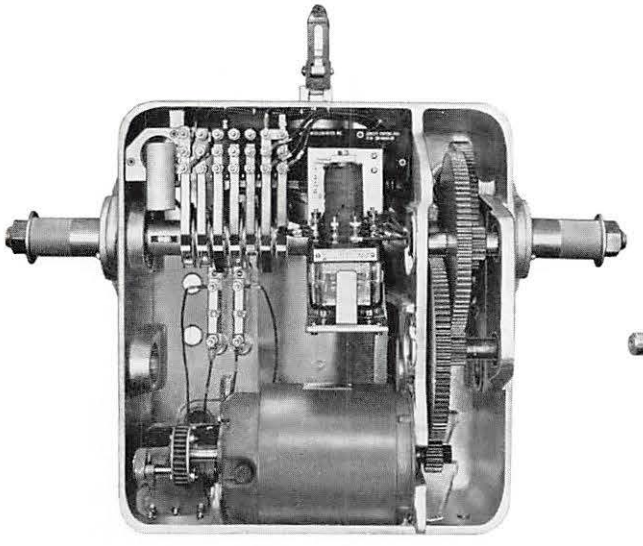
3590 SERIES CROSSING GATE MECHANISMS



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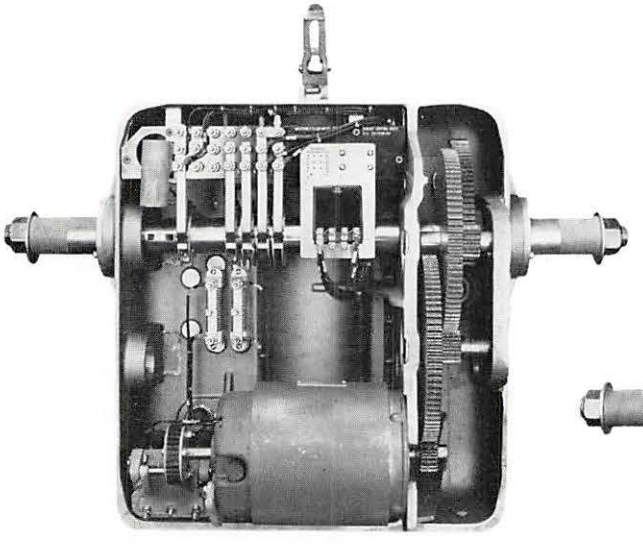

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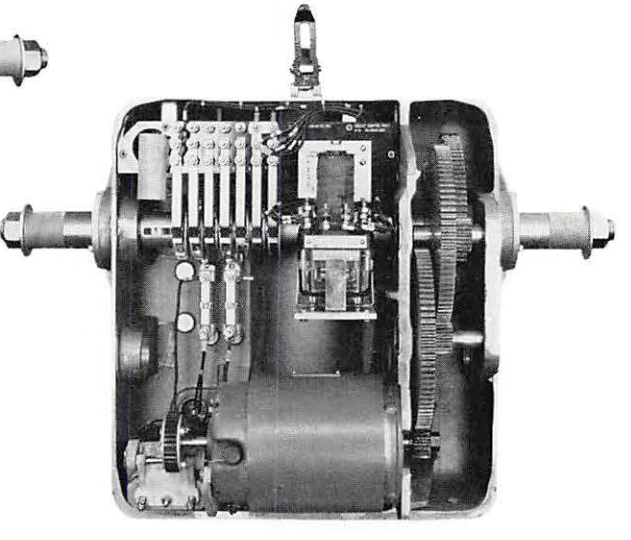

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3590 SERIES
CROSSING GATE MECHANISMS

Ref. No.	Description	Piece No.
	For the following items refer to Page 3-212	
M	Type 3590 Crossing Gate Mechanism, for roadway arm only with 12-20 VDC motor and hardware kit for mounting on 5" I.D. pipe post	3590-131
M1	As above, but including sidewalk arm shaft.	3590-132
M2	Type 3590B Crossing Gate Mechanism, for roadway arm only with 12-20 VDC motor and hardware kit for mounting on 5" I.D. pipe post.	3590B-131
M3	As above, but including sidewalk arm shaft.	3590B-132
M4	Type 3593 Crossing Gate Mechanism, for roadway arm only with 12-20 VDC motor and hardware kit for mounting on 5" I.D. pipe post	3593-131
M5	As above, but including sidewalk arm shaft.	3593-132
	For the following items, refer to Page 3-214	
A	Motor Assembly, Complete. For details see page 3-217	38-0045-82X
B	Hold-Clear Assembly, Complete. For details see page 3-218	38-0045-254
C	Circuit Controller, Complete, for Type 3590 Crossing Gate Mechanism. For details see page 3-220	38-0045-20
C1	Circuit Controller, Complete, for Type 3590B Crossing Gate Mechanism. For details see page 3-220	38-0045-20-1
C2	Circuit Controller, Complete, for Type 3593 Crossing Gate Mechanism. For details see page 3-220	38-0045-235
D	Motor Control Relay for Types 3590 and 3593 Crossing Gate Mechanism, 2FB, 1000 ohms. For details consult factory.	38-0050-200
D1	Motor Control Relay for Type 3590B Crossing Gate Mechanism, 2FB, 32.3 ohms	38-0045-188-1
D2	Alternative Motor Control Relay for Types 3590 and 3593 Mechanism, 2FB, 280 ohms. For details consult factory.	38-0050-400
D3	Same as D2, but 160 ohms.	38-0050-300
E	Sidewalk Arm Shaft Kit. Permits addition of sidewalk arm to roadway mechanism listed above. For details, see Page 3-221.	3590-295
F	Heater, Complete. 115VAC-25W. For details see page 3-222	38-0045-287
F1	Heater, Complete. 24 VDC-25W. For details see page 3-222	38-0045-318
G	Hardware Kit—Includes mounting clamps & bolts and other miscellaneous accessory equipment (not shown)	3590-294
H	4" Mast Adapters—Bolt Sleeve; 6 are required to adapt the mechanism mounting hardware (not shown)	3580-300
J	Counter Complete, unit automatically counts mechanism operation cycles. For details see page 3-223	38-0045-192

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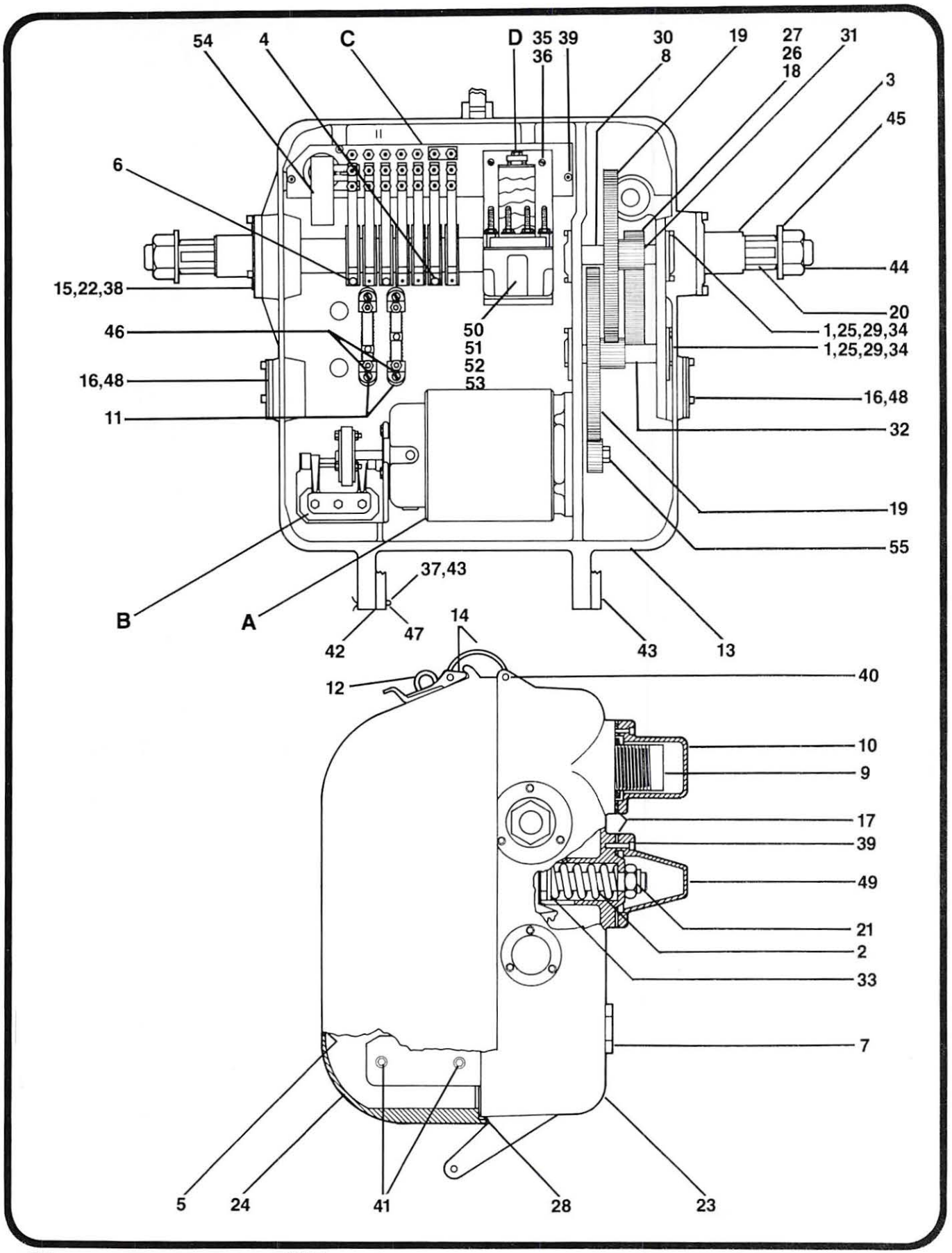
CROSSING GATE MECHANISM



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3590 SERIES
CROSSING GATE ASSEMBLY

REPLACEMENT PARTS

Ref. No.	Description	Piece No.
1	Bearing Cover	38-0045-30
2	Spring, Vertical Stop	38-0045-38
3	Space Tube	38-0045-42
4	Cam Assembly (for Contacts No. 2 thru No. 7)	38-0045-55
5	Wiring Diagram, for Type 3590 Mech (Not Shown)	38-0045-321
5a	Wiring Diagram, for Type 3590B Mech (Not Shown)	38-0045-320
5b	Wiring Diagram, for Type 3593 Mech (Not Shown)	38-0045-330
6	Slide Cam Assembly (for No. 1 Contact)	38-0045-92
7	Hex Bushing	38-0045-138
8	Gear Shaft for Intermediate Gears (Not Shown)	38-0045-267
9	Spring Assembly, Horizontal Stop	38-0045-305
10	Horizontal Stop Spring Cover	38-0045-312
11	Adjustable Resistance Unit	1110-1
12	Staple	1265-4
13	Ventilator Screen (Not Shown)	1265-6-A
14	Hasp Assembly	1265-40
15	Bearing (Not Shown)	3580-166
16	End Cap	3580-291
17	Neoprene Gasket	3580-281
18	Gear Segment	3590-219-F
19	Gear Cluster	3590-220-F
20	Main Shaft	3590-222
21	Nut, Nylon Insert, for Vertical Stop Assy.	3590-231
22	Cap, Main Shaft	3590-232
23	Case	3590-234-M
24	Cover	3590-240-M
25	Bearing (Not Shown)	3590-249

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CROSSING GATE MECHANISM

REPLACEMENT PARTS

Ref. No.	Description	Piece No.
26	Set Screw	3590-251
27	Woodruff Key	3590-254
28	Gasket	3590-258
29	Bearing Cap Spacer	3590-276
30	Spacer	3590-277
31	Spacer	3590-278
32	Spacer	3590-279
33	Bumper Pin Assembly, Vertical Stop	3590-293
34	BTN. HD. SOC. Cap. Sc. STL., ZP.	#8-32 x 3/8 Lg
35	RD. HD. Mach. Sc., STL., ZP.	#10-24 x 1¼
36	Lock Washer	#10
37	Cotter Pin, STL., ZP.	3/16 x 2½ Lg
38	HH. Soc. Cap Scr., ZP.	¼-20 x ¾ Lg
39	HH. Soc. Cap Scr., STL., ZP.	¼-20 x 1¼
40	Roll Pin STL., ZP.	5/16 x 1⅝ Lg
41	Flat HH. Soc. Cap. Sc., STL., ZP., for Motor	⅜-16 x 1 Lg
42	Flat Washer, STL., ZP.	⅜
43	Roll Pin, STL., ZP.	⅜ x 2" Lg
44	Hex Nut, STL., ZP.	1¼-7
45	Flat Washer, STL., ZP.	1¼ ID
46	RD. HD. BR. Mach. Scr.	10-24 x 1¾
47	PLN. STL. Washer ZP.	¼"
48	HH. Soc. Cap Screw ZP.	¼-20 x ⅜
49	Vertical Stop Spring Cover	3580-247
50	MTG. BRKT. & Spring Base Assembly	38-0045-225
51	Spring Lockwasher STLQ (.Not Shown)	#10
52	Hex Nut, Brass (Not Shown)	#10-32
53	RD. HD. Mach. Screw, Brass (Not Shown)	#10-32 x ½"
54	Arc Suppressor	38-0045-293
55	Pinion Gear	3590-218

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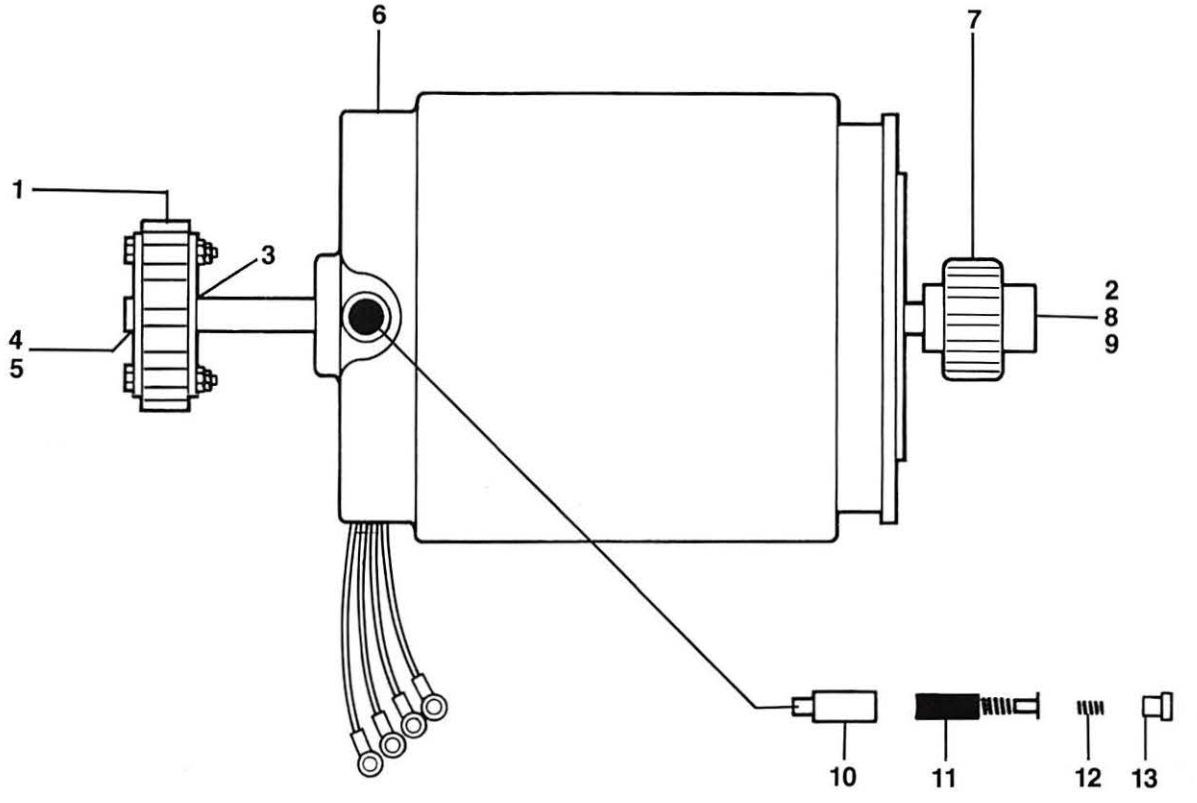
MOTOR AND RATCHET WHEEL



Ref. No.	Description	Piece No.
A	Motor Assembly Complete 3590/93	38-0045-82X
	REPLACEMENT PARTS	
1	Ratchet Wheel Assembly	38-0045-262
2	Woodruff Key, Motor Pinion	38-0045-86
3	Washer (1 pc)	38-0045-182
4	Key, Ratchet Wheel	3580-270
5	Retaining Ring	3580-271
6	Motor	3590-217X
7	Pinion, Motor	3590-218
8	RD HD Mach Screw Nylok	#8-32-½ LG
9	Washer	38-0045-241
10	Brush Holder	38-0045-117
11	Motor Brush	38-0045-118
12	Cap Spring	38-0045-137
13	Brush Cap	38-0045-268

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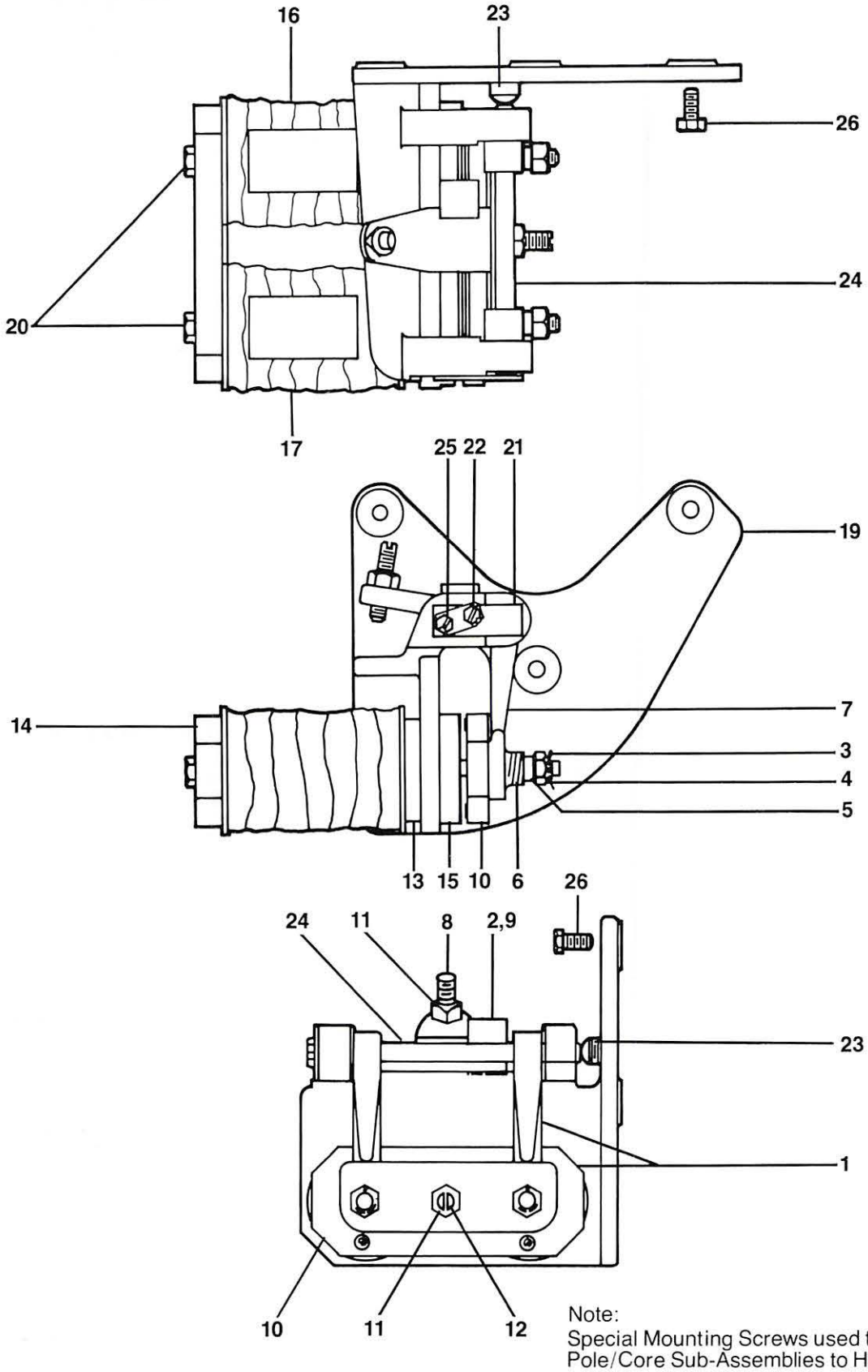
CROSSING GATE MECHANISM



Note:
Special Mounting Screws used to hold Pole/Core Sub-Assemblies to Hold-Clear Base are Ref. 18, Page 3-219.

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HOLD CLEAR ASSEMBLY

Ref. No.	Description	Piece No.
B	Hold-Clear Assembly, Complete	38-0045-254
	REPLACEMENT PARTS	
1	Armature and Support Bracket Assembly, consists of References 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	38-0045-159
2	Pawl	38-0045-7
3	Cotter Pin	38-0045-139
4	Castle Nut	38-0045-140
5	Cup Washer	38-0045-220
6	Compression Spring	38-0045-223
7	Armature Support Bracket	38-0045-246
8	Set Screw	38-0045-256
9	Pawl Mounting Screw (Not Shown)	38-0045-261
10	Armature Sub-Assembly	38-0045-265
11	Hex Jam Nut, Brass Nickle Pl., ¼-20	
12	Set Screw	38-0045-266
13	Coil Spacer	38-0045-147
14	Magnet Yoke	38-0045-148
15	Magnet Pole and Core Sub-Assembly	38-0045-151
16	Hold Coil, 340 Ohms	38 0045-158
17	Pick Coil, 32 Ohms	38-0045-162
18	Mounting Screw, Pole/Core Sub Assy to Hold-Clear Base (Not Shown)	38-0045-260
19	Hold-Clear Base	38-0045-248
20	Mounting Screw, Magnet Yoke to Pole/Core Sub-Assy	38-0045-264
21	Hinge Pin Stop	38-0045-152
22	Bolt/Screw Keeper	38-0045-153
23	Set Screw, Nickel Plated Brass	38-0045-157
24	Hinge Pin	38-0045-160
25	Hex Bolt, Nickel Plated Brass	38-0045-279
26	Hex Head Cap Screw, Grade 8	38-0045-282

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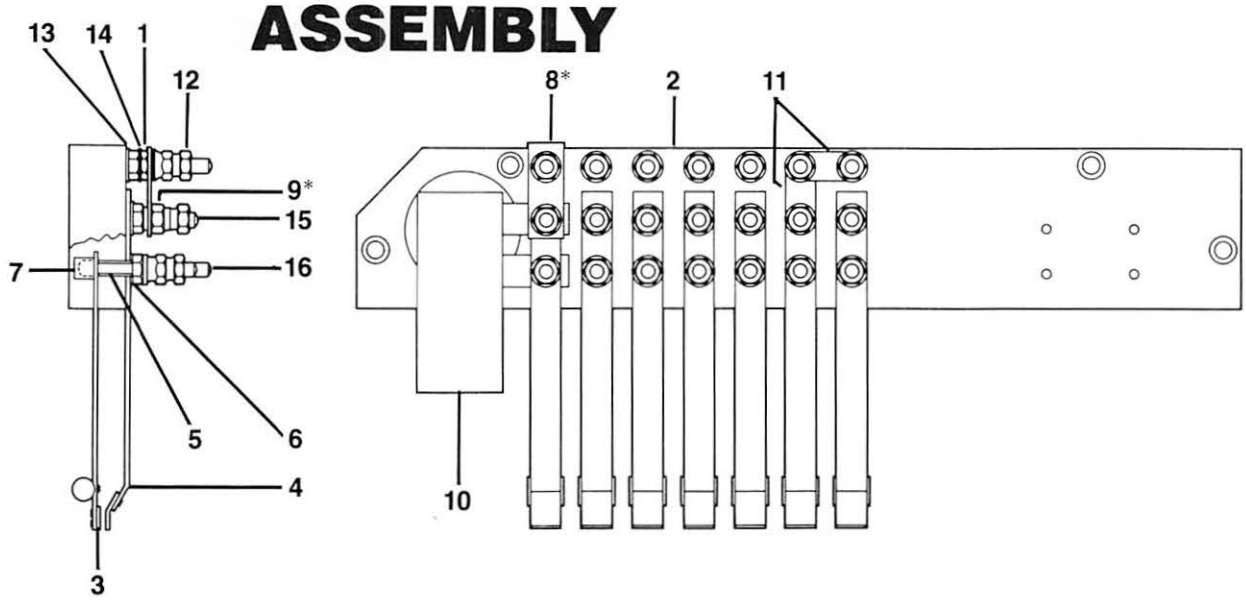
CIRCUIT CONTROLLER ASSEMBLY



Ref. No.	Description	Piece No.
C	Circuit Control Assembly Complete 3590	38-0045-20
C1	As above, but for type 3590-B mech	38-0045-20-1
C2	As above, but for type 3593 mech	38-0045-235

REPLACEMENT PARTS

1	Hex Nut	0012-5
2	Terminal Board	38-0045-21-A
3	Contact Spring Assy, Back	38-0045-27
4	Contact Spring Assy, Front	38-0045-28
5	Insulator Sleeve	38-0045-29-A
6	Insulator Washer	38-0045-29-B
7	Binding Post Seat	38-0045-77
8*	Test Terminal	38-0045-89
9*	Gold Test Nut	38-0045-290
10	Arc Suppressor	38-0045-293
11	Connector	1705-4
12	Binding Nut	10706
13	Clamp Nut	10707
14	Washer	10708
15	Binding Post 1⅞ LG	10709-2
16	Binding Post 2¼ LG	10709-3

*Test Terminal and Gold Test Nut located as shown on Types 3590 and 3590B Mechanism; located on Terminals 6A, 7A on Type 3593 Mechanism

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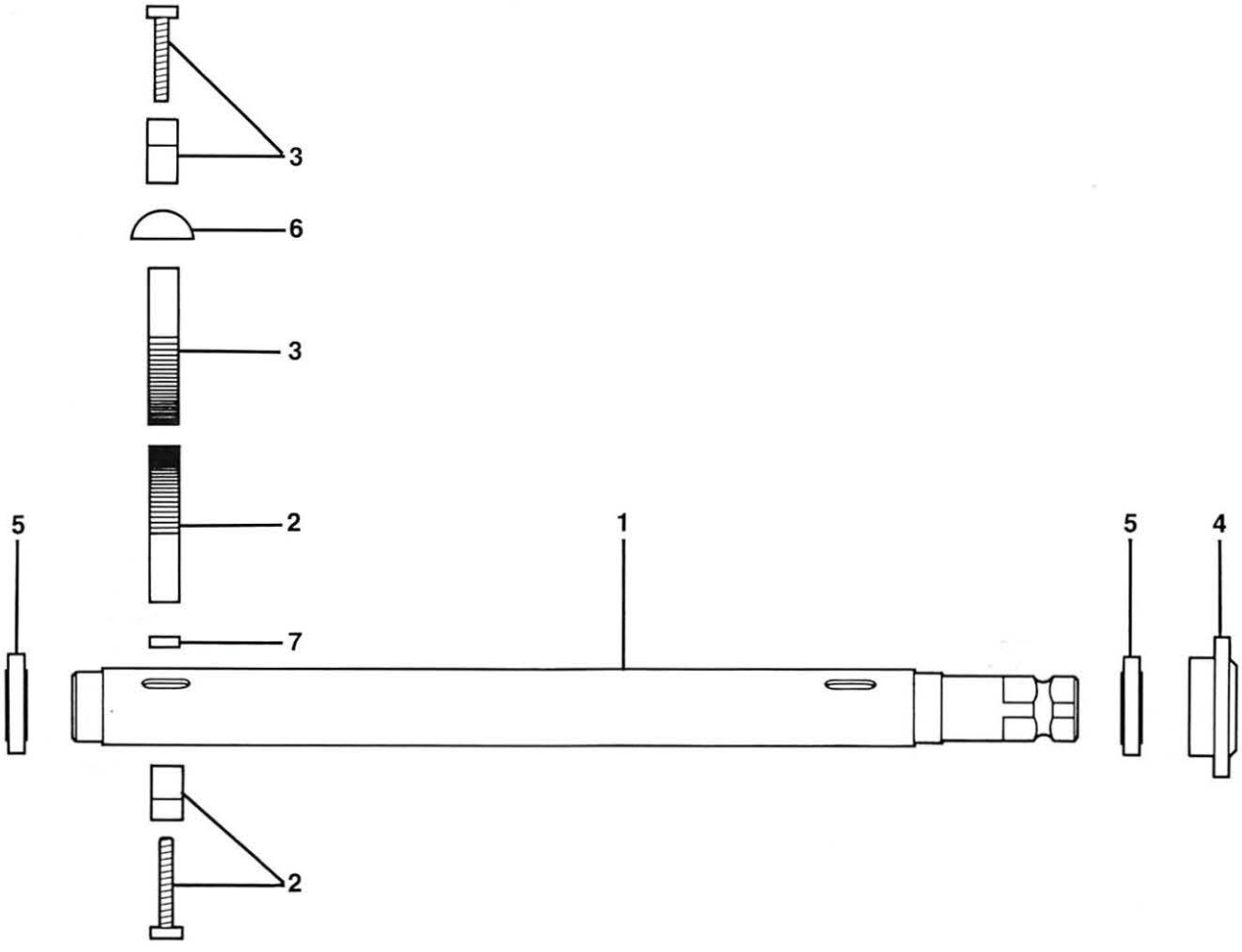
SIDEWALK KIT



Ref. No.	Description	Piece No.
E	Sidewalk Arm Shaft Kit (for RH or LH use)	3590-295

REPLACEMENT PARTS

1	Sidewalk Arm Shaft	3590-223
2	Gear Segment w/clamp and Assy. Bolts, for Sidewalk Shaft	3590-224
3	Gear Segment w/Clamp and Assy. Bolts, for Main Shaft	3590-225
4	Collar	3590-227
5	Bearing	3590-248
6	Woodruff Key, for Main Shaft	3590-254
7	Key, for Sidewalk Shaft	3590-255

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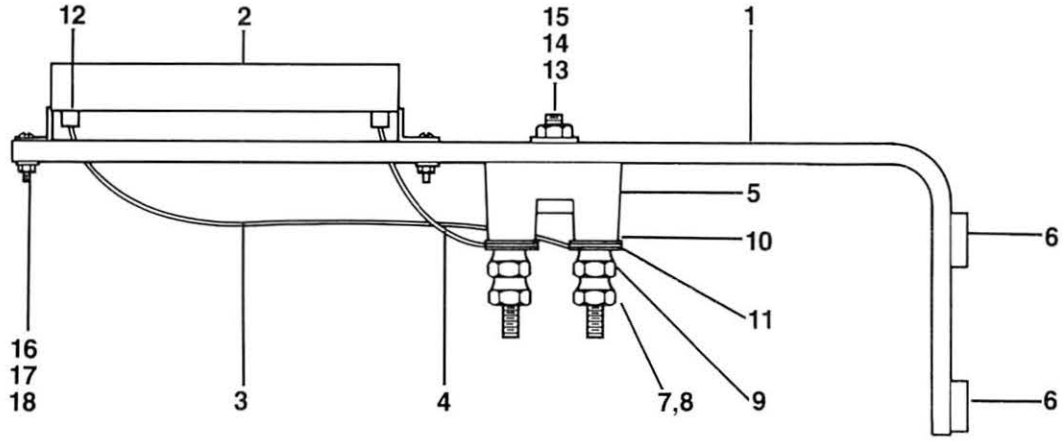
CONTACT HEATER ASSEMBLY



Ref. No.	Description	Piece No.
F	Contact Heater Assembly Complete, 115VAC, 25 Watt	38-0045-287
F1	Contact Heater Assembly Complete, 24 VDC, 25 Watt	38-0045-318
	REPLACEMENT PARTS	
1	Mounting Bracket	38-0045-288
2	Resistance Heater, 115 VAC	38-0045-286
2a	Resistance Heater, 24 VDC	38-0045-317
3	14 Ga. Wire, 8½" lg.	39-0102-2-T
4	14 Ga. Wire, 4" lg.	39-0102-2-S
5	Terminal Assy.	2506-1-1
6	Spacer	5907-184
7	Insulating Cap Black (Not Shown–on 115 VAC Heater only)	R-2000-1
8	Insulating Sleeve (Not Shown–on 115 VAC Heater only)	R-2000-2-A
9	Binding Nut	10706
10	Washer	10708
11	Wire Terminal	31906
12	Shrink Tube	¼ ID x ¾
13	Fillister HD. Scr.	¼-20 x 1
14	Hex Nut	¼-20
15	Lockwasher	¼-20
16	Rd. Hd. Mach. Scr.	6-32 x ½
17	Split Lockwasher	6-32
18	Hex Nut	6-32

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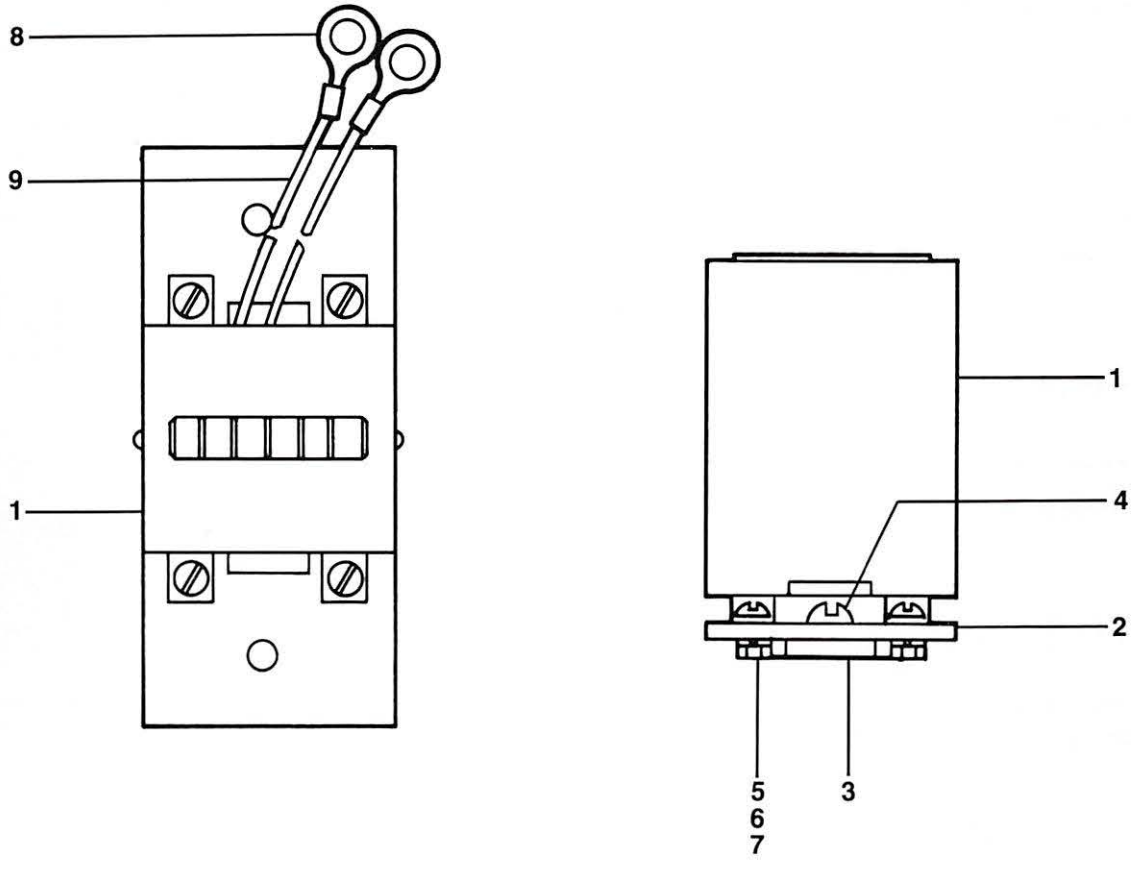
COUNTER KIT



Ref. No.	Description	Piece No.
J	Counter Kit	38-0045-192
	REPLACEMENT PARTS	
1	Counter	38-0045-193
2	Mounting Plate	38-0045-194
3	Spacer	5907-184
4	RD HD Mach. Sc. Cad. PLT. Brass	#10-24 x ½ Lg.
5	RD HD Mach. Sc. Cad. PLT. Brass	#6-32 x ⅜ Lg
6	Internal Tooth Lockwasher (Not Shown)	#6
7	Hex Nut Cad. PLT Brass	#6
8	Terminal	31906
9	Wire Assembly	39-0106-23

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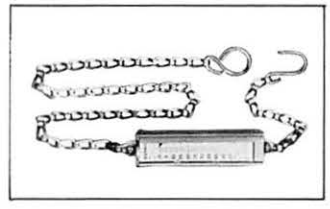
MAINTENANCE AIDS

TORQUE ADJUSTING SCALE

Appropriate spring scales complete with chain and hook, for measuring torque, are available.

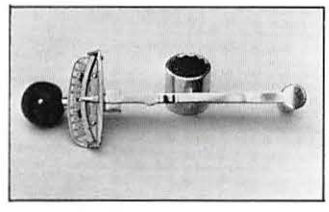
PN: 3562-210



TORQUE WRENCH KIT

Vertical Torque measurements can be obtained by utilizing hex stub furnished as integral part of Motor Pinion (Order Kit No. 3590-K8 if motor pinion does not have hex stub).

PN: 3590-K9



TOOL KIT

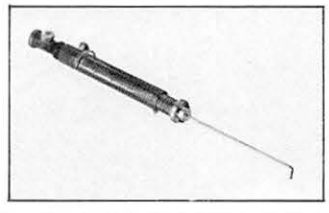
Specialized tools required to perform normal field maintenance on 3590 Series Gate Mechanisms, including four "T" handled Allen wrenches, one combination wrench, one terminal wrench and carrying case.

PN: 3590-K11

CONTACT TENSION TESTING SCALE

This Tension Testing Scale meets the requirement for determining contact pressure. It can be used to measure tension by pushing the movable contact away from the fixed contact or by pulling it away. Full scale two pounds by ¼ ounces.

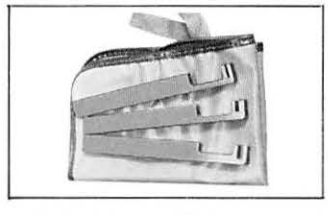
PN: 3565-211



CONTACT ADJUSTING TOOL KIT

After measuring contact pressure, it may be necessary to make adjustments. These special tools should be used. Kit consists of 3 adjustment tools and convenient carrying pouch.

PN: ES-6104-6



GEAR GREASE

This Gear Grease is recommended for use with crossing gate mechanisms. Its unique characteristics include:

1. Ability to remain viscous in cold temperatures.
2. Reduced tendency to splatter.
3. Does not emit fumes that attack motor brushes, causing them to crumble, as do some types of greases.

PN: 3590-1650

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FIBERGLASS GATE ARMS AND MAINTENANCE PARTS

GENERAL INFORMATION

The Western-Cullen-Hayes Fiberglass Gate Arm is field proven. Signalmen appreciate the benefits gained as a result of its many unique features.

Easy To Handle—

Lightweight . . . . . 13′-19′ Arm is 23.50 pounds.
. . . . . 20′-26′ Arm is 32.75 pounds.
Longest Section . . . . . only 9′6″.

Strong, Safe—

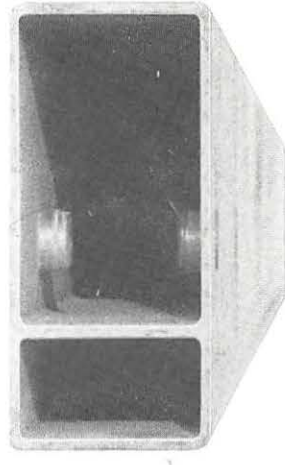
Designed to withstand 90 mph velocity wind load. Excellent dielectric strength—200 volts per Mil.

Stair-Stepped, Trombone Design—

Less wind resistance, fewer blowdowns. Less sag due to weight. Only two arms are necessary to cover a range from 13′-26′.

Independent Bolts at Joints—

Thread into nuts imbedded in the fiberglass. Pull adjoining walls together instead of collapsing them. Strengthen union between sections, reducing droop.



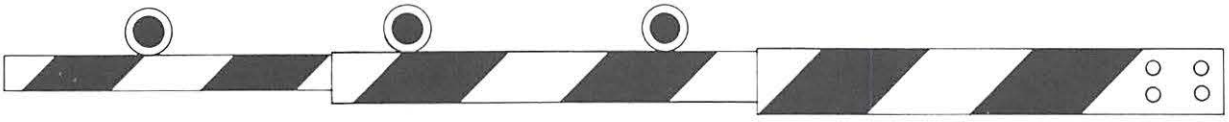
Internal Web—

Strengthens arm. Provides cable raceway, if desired.

Adaptable—

Inside dimensions at the end of the Butt Section (4¾″ x 1¾″) are common to other makes of Fiberglass arms. Three types of gate lights to choose from. Direct-connection and pull apart cables available. Many different break-away adapters accommodate all types of gate mechanisms and other-make break-away devices. Modified design available for use as sidewalk arm.

Following catalog pages detail various arm assemblies and maintenance parts. Consult Section 3-400 for Adapters and Section 3-500 for Gate Light details.



ORDERING REFERENCES—WITH LIGHTS AND WIRING

Furnished complete with 3 gate lights, wiring, cable clips, and all necessary mounting hardware. Arms with standard wiring harnesses and those with female, pull-apart connectors are listed. Female connector matches male plug furnished with certain W-C-H adapters.

Type of Red and White Reflex-Reflective Cover	With Connector	Arm Length	WITH TYPE GATE LIGHT		
			Type 1590	Type 1591	Type 1592
Engineering Grade	No	13'-19'	38-0026-54	38-0026-80	38-0026-84
	No	20'-26'	38-0026-56	38-0026-81	38-0026-85
Hi-Intensity Grade	No	13'-19'	38-0026-135	38-0026-137	38-0026-114
	No	20'-26'	38-0026-136	38-0026-138	38-0026-115
Engineering Grade	Yes	13'-19'	38-0026-150	38-0026-151	38-0026-152
	Yes	20'-26'	38-0026-156	38-0026-157	38-0026-158
Hi-Intensity Grade	Yes	13'-19'	38-0026-153	38-0026-154	38-0026-155
	Yes	20'-26'	38-0026-159	38-0026-160	38-0026-161

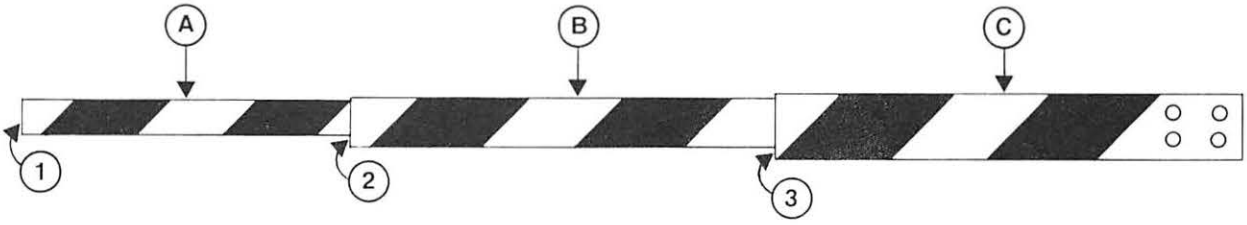
ORDERING REFERENCES—ARMS ONLY

Type of Red and White Reflex-Reflective Cover	Arm Length	Piece No.
Engineering Grade	13'-19'	38-0026-47
	20'-26'	38-0026-57
Hi-Intensity Grade	13'-19'	38-0026-112
	20'-26'	38-0026-113

These arms are furnished with assembly hardware.

Sidewalk arms are listed elsewhere in this section.

ORDERING REFERENCES



ARM SECTIONS

Type of Red and White Reflex-Reflective Cover	Arm Length	Reference A Tip Section	Reference B Mid Section	Reference C Butt Section
Engineering Grade	13'-19'	38-0026-50	38-0026-49	38-0026-48
	20'-26'	38-0026-60	38-0026-59	38-0026-58
Hi-Intensity Grade	13'-19'	38-0026-108	38-0026-107	38-0026-106
	20'-26'	38-0026-111	38-0026-110	38-0026-109

END PLUGS

Reference 1 Tip End Plug	Reference 2 Mid End Plug	Reference 3 Butt End Plug
38-0026-53	38-0026-52	38-0026-51

Same for any length arm.

WIRING KITS

Type Kit	Arm Length 13'-19'	Arm Length 20'-26'
W/O Female Plug Connector	38-0011-46	38-0011-47
With Female Plug Connector	38-0026-162	38-0026-163
Butt End of Cable W/Female Plug Only	38-0026-120B	38-0026-120A

Kits furnished complete with mounting hardware.

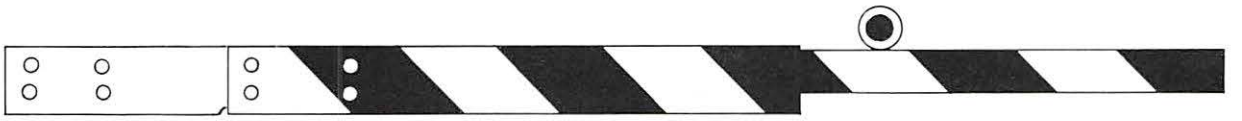
HARDWARE

Purpose	Bolt	Washer	Nut
Holding Arm Sections Together	Hex Head, 5/16"-18 x 3/4"	5/16"	N/A
Holding Arm To Adapter	Hex Head, 3/8"-16 x 2½"	3/8"	3/8"-16

All hardware zinc plated, di-chromate dipped.

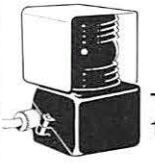
NOTE: Consult Catalog Section 3-400 for information on Breakaway Adapters, Section 3-500 for Gate Lights.

SIDEWALK
FIBERGLASS GATE ARMS



ORDERING REFERENCES—WITH LIGHT AND WIRING

Furnished complete with one gate light; wiring kit, Adapter to mount directly to Model 10 Sidewalk Bracket (3565-111A). See Section 3-500 for Gate Light details and Section 3-400 for Adapter details.

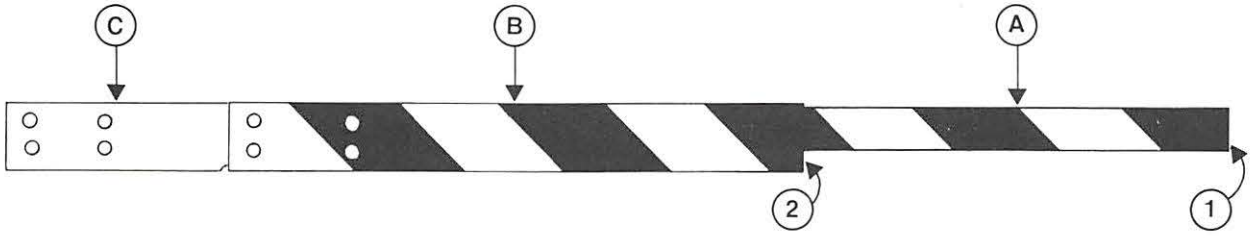
Type of Red and White Reflex-Reflective Cover	Arm Length	WITH TYPE GATE LIGHT		
		 Type 1590	Type 1591	Type 1592
Engineering Grade	3′-10′	38-0026-220	38-0026-221	38-0026-222
	11′-18′	38-0026-223	38-0026-224	38-0026-225
Hi-Intensity Grade	3′-10′	38-0026-226	38-0026-227	38-0026-228
	11′-18′	38-0026-229	38-0026-230	38-0026-231

ORDERING REFERENCES

Type of Red and White Reflex-Reflective Cover	Arm Length	ARM W/ADAPTER ONLY Piece No.	ARM ONLY Piece No.
Engineering Grade	3′-10′	38-0026-199	38-0026-204
	11′-18′	38-0026-232	38-0026-235
Hi-Intensity Grade	3′-10′	38-0026-233	38-0026-236
	11′-18′	38-0026-234	38-0026-237

These arms are furnished with assembly hardware.

ORDERING REFERENCES



ARM SECTIONS

Type of Red and White Reflex-Reflective Cover	Arm Length	Reference A Tip Section	Reference B Butt Section
Engineering Grade	3'-10'	N/A	38-0026-204
	11'-18'	38-0026-60	38-0026-204
Hi-Intensity Grade	3'-10'	N/A	38-0026-236
	11'-18'	38-0026-111	38-0026-236

Adapter, Ref. C, with hardware to mount to Model 10 Sidewalk Arm Bracket (3565-111A) . . . 38-0026-195.

END PLUGS

Reference 1 Tip (3'-10')	Reference 1A Tip (11'-18')	Reference 2 Butt (11'-18')
38-0026-205	38-0026-51	38-0026-52

WIRING KITS

Arm Length	Piece No.
3'-10'	38-0026-120
11'-18'	38-0026-121

Kits furnished complete with mounting hardware.

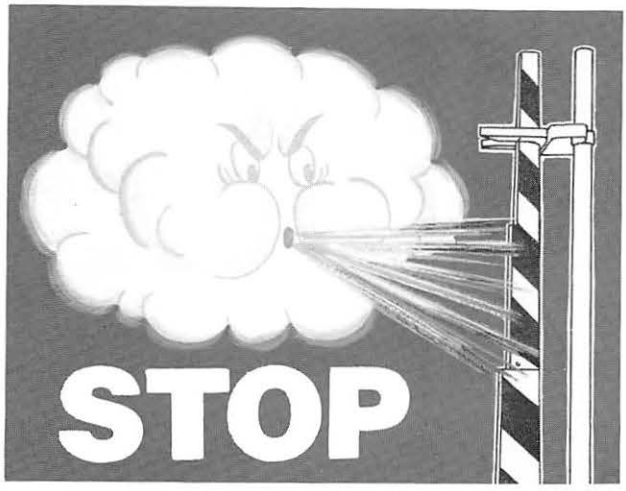
HARDWARE

Purpose	Bolt	Washer	Nut
Holding Arm Sections Together	Hex Head, 5/16"-18 x 3/4"	5/16"	N/A
Holding Arm To Adapter	Hex Head, 3/8"-16 x 2 1/4"	3/8"	3/8"-16

All hardware zinc plated, di-chromate dipped.

NOTE: See Section 3-500 for Gate Light Details.

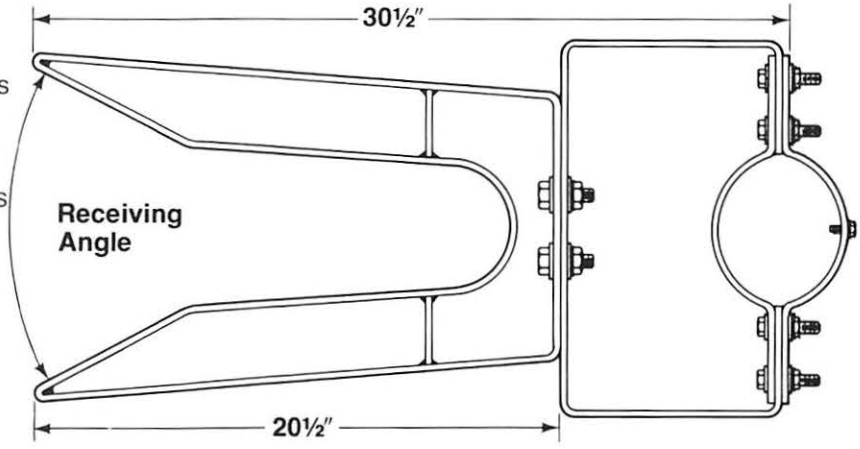
NOTES



BLOW-DOWNS

HIGH WIND GATE ARM SUPPORT

- For Fiberglass, Aluminum and Aluminum/Fiberglass Gate Arms
- Special Unit for Off-Set Arm on WABCO AL-70 Mechanism
- Will Accommodate 4" or 5" Masts
- Lock Bolt Resists Support Turning on Mast
- Non-Binding Design
- Wide Receiving Angle
- Adjustable

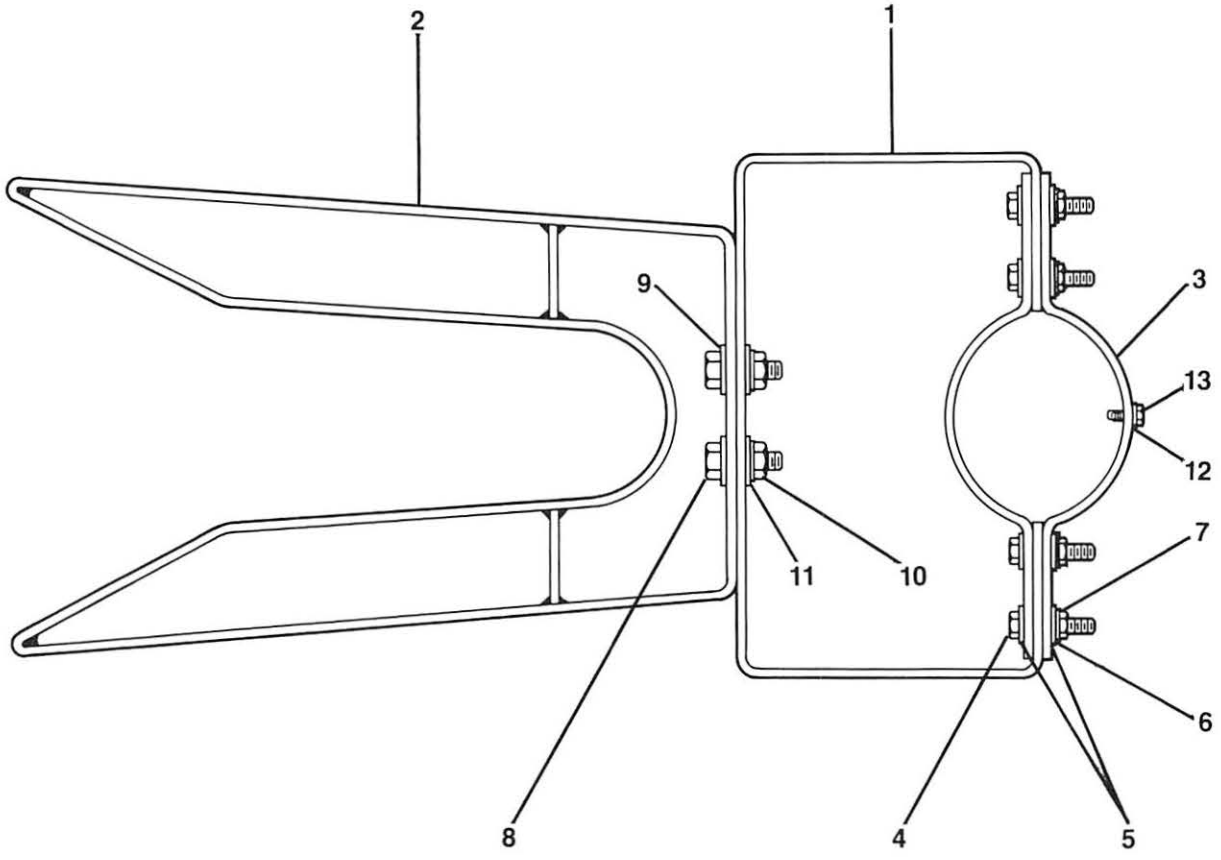


Properly installed and maintained, the W-C-H High Wind Gate Arm Support can significantly reduce wind caused knock-downs of breakaway gate arms. Unique features such as the non-binding design of the Receiving Bracket, the wide receiving angle, and the Lock Bolt combine to keep the potential for arm blockage to a minimum. Alignment of the Receiving Bracket sub-assembly is adjustable. Detailed installation instructions accompany each unit.

Ordering References

Ref. No.	Description	Part No.
A	High Wind Support for Mast-Mounted Mechs. 4" masts	3565-180-1
B	As above, but for 5" masts	3565-180
C	Special High Wind Gate Arm Support (AL-70) for 4" masts	3565-181-1
D	As above, but for 5" masts	3565-181
E	High Wind Support for use with Pedestal-type Mechs. 4" masts	3565-188-1
F	As above, but for 5" masts	3565-188

HIGH WIND GATE ARM SUPPORT



REPLACEMENT PARTS

ORDERING REFERENCES

Ref. No.	Description	Part No.
1	"C" Bracket	3565-175
2	Receiving Bracket	3565-178
3	Pipe Clamp, 4" Mast (2 req'd)	3565-179
3a	Pipe Clamp, 5" Mast (2 req'd)	3565-179-1
4	3/8-16 x 2" Lg HH Mach Screw	
5	3/8" Plain Washer	
6	3/8-16 Hex Nut	
7	3/8" Split Lockwasher	
8	1/2" x 1 1/4" Lg HH Mach Screw	
9	1/2" Plain Washer	
10	1/2-13 Hex Nut	
11	1/2" Split Lockwasher	
12	3/8-16 Hex Nut	
13	3/8-16 x 1 1/2" Lg HH Bolt	

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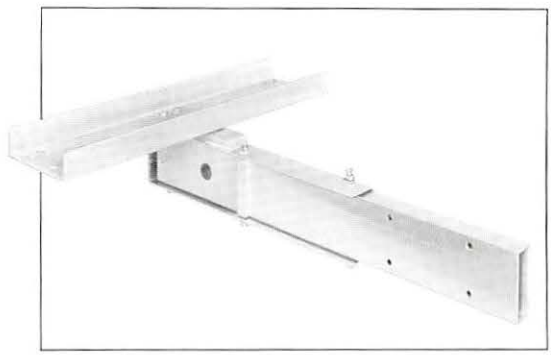
BREAKAWAY ADAPTERS FOR FIBERGLASS ROADWAY ARMS AND MAINTENANCE PARTS

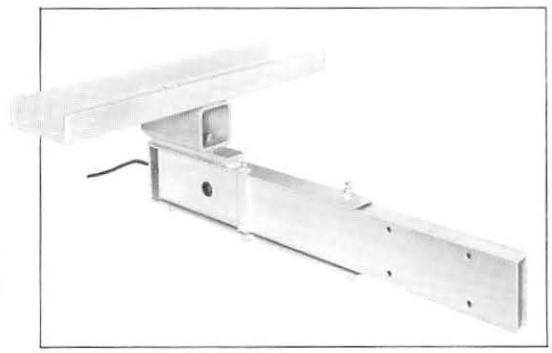
Adapters with and without male pull-apart plug and cable assemblies are listed below. Plug matches female connector furnished on certain W-C-H fiberglass gate arms.

For Model 10 Crossing Gate Signals and other mast-mounted crossing gates using Type 1590 or Type 1591 Gate Lights.



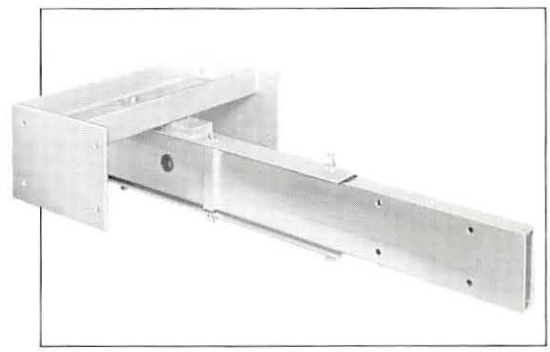
	ORDERING REFERENCE
W/O Plug	3575-177
With Plug	3575-181

For Model 10 Crossing Gate Signals and other mast-mounted crossing gates using Type 1592 Gate Lights (7" dia).



	ORDERING REFERENCE
W/O Plug	3575-179
With Plug	3575-183

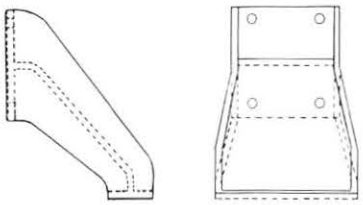
For pedestal type crossing gate signals.



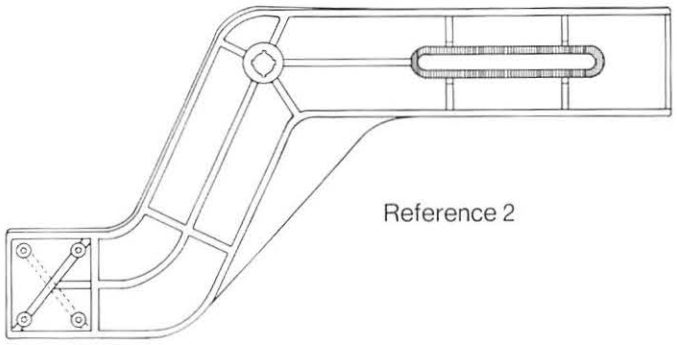
	ORDERING REFERENCE
W/O Plug	3575-178
With Plug	3575-182

See pages 3-404 thru 3-406 for details of above adapters and for maintenance parts ordering references.

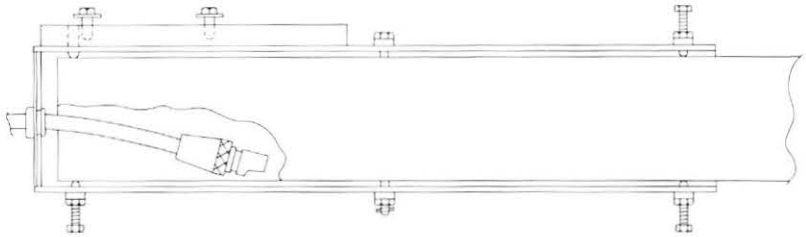
BREAKAWAY ADAPTERS FOR MODEL 10A SIGNALS



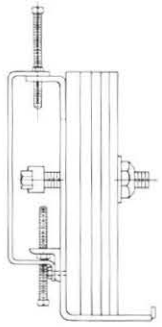
Reference 1



Reference 2



Reference 3



Reference 4

ORDERING REFERENCES

Western-Cullen-Hayes has furnished Type 3569 (GRS Model F) and Type 3570 (WABCO AL-70) Light Weight Gate Mechanism in years past. Many of these mechanisms were equipped with either wood or aluminum gate arms. These mechanisms can be converted to employ W-C-H Fiberglass Gate Arms by using the chart below. This information can also be a guide for ordering spare parts if you already are using W-C-H Fiberglass Arms with these mechanisms.

One of the benefits to using the full W-C-H Conversion Adapter Set for these mechanisms is that with the use of the Adapter Off-Set Bracket (Ref. 1, PN. 3575-128) the arm is brought back to the center of the mast. Doing so helps to reduce the potential of the arm to snag in the crossarm or obscure the main flashing light indication.

The Breakaway Assembly (Ref. 3) specified below is equipped with the male portion of a pull-apart plug set. Arms ordered for use in the conversion process should be equipped with the female portion of the set.

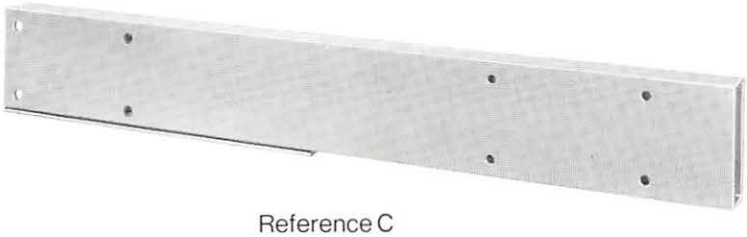
To simplify the ordering process, a counterweight set (Ref. 4) has been developed. All brackets, counterweights and hardware necessary to accommodate up to a 26 foot, W-C-H Fiberglass Arm are included.

Type Mechanism	Type Arm In Service Now	Order components as indicated			
		Reference 1	Reference 2	Reference 3	Reference 4
3569, GRS "F"	Wood	**3575-128**	**38-0032-3**	**3575-187**	**3565-605FG**
	W-C-H Aluminum	N/A	N/A	**3575-187**	N/A
3570, WABCO AL-70	Wood	**3575-128**	**3575-103LW**	**3575-187**	**3565-605FG**
	W-C-H Aluminum	N/A	N/A	**3575-187**	N/A
	WABCO Aluminum	Order Adapter PN: **38-0026-44-2**			

In addition to above items, four each Cap Screw, Hex Head, ½"-13 x 1¼", zinc plated, di-chromate dipped, are required to mount Ref. 1 to Ref. 2.

Reference A

Reference B



Reference C

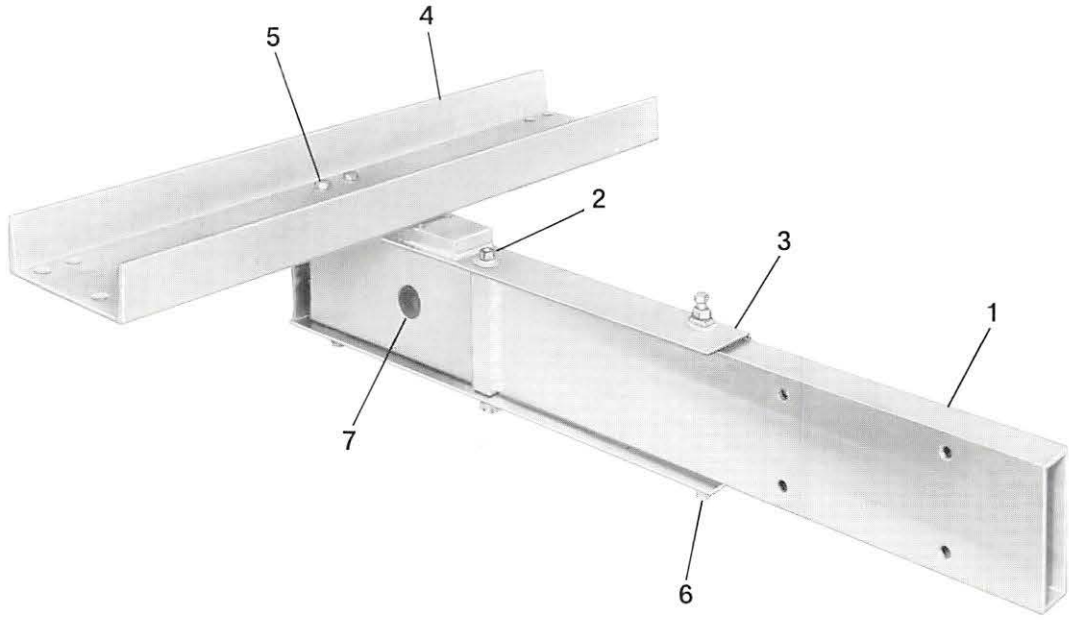
Reference D

ORDERING REFERENCES

Special Fillers and Adapters to permit use of Western-Cullen-Hayes Fiberglass Arms on other-make breakaway devices, and on Sidewalk Arm Bracket (PN: 3565-111) of Model 10 Signal.

Reference	Description	Piece No.
A	Adapter for WABCO Breakaway Device	38-0026-44-2
B	Filler for Safetran Breakaway Adapter, Series 076203 (-2X, -8X, -21, -510X)	38-0026-200
C	Adapter for Safetran Breakaway Adapter, Series 076203-501X	38-0026-209
D	Adapter to allow use of Special Fiberglass Arm on Sidewalk Arm Bracket (PN:3565-111) of Model 10 Signal	38-0026-195

BREAKAWAY ADAPTER FOR MODEL 10 SIGNALS
(Use with 4" Dia. Gate Lights)

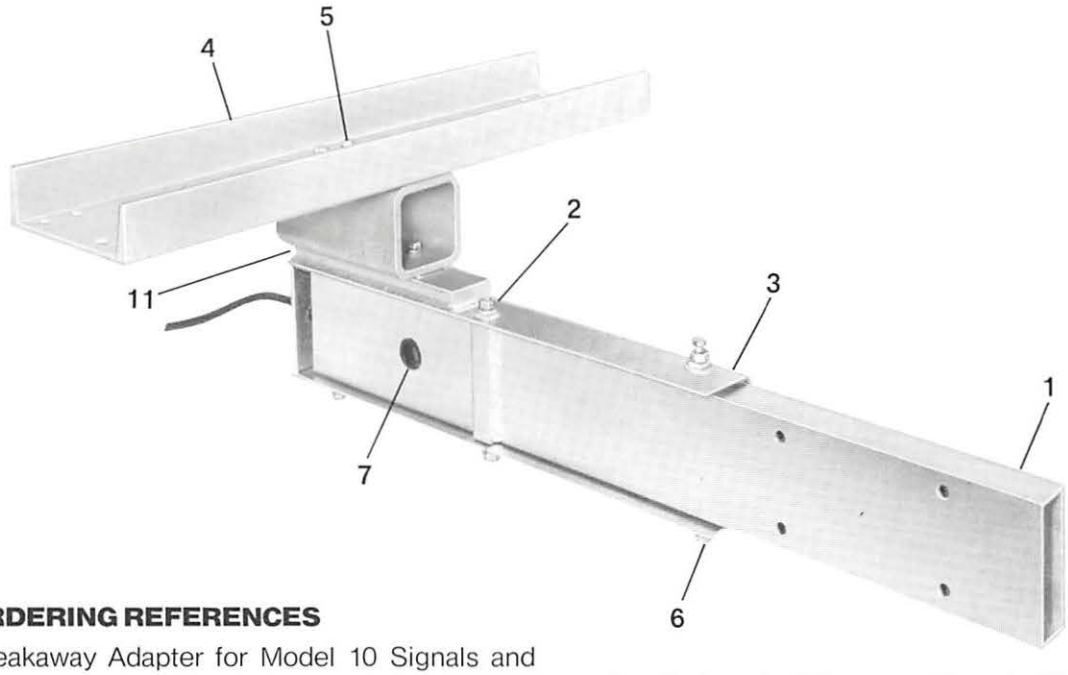


ORDERING REFERENCES

Breakaway Adapter for Model 10 Signals and other mast-mounted crossing gate signals using Type 1590 (fresnel lens) or Type 1591 (4" dia.) Gate Lights. For arms to 26 feet in length. Adapter with and without male plug and cable assembly listed below.

Reference	Description	Piece No.
A	Adapter, complete w/o Male Pull-apart Plug and Cable Assembly	3575-177
B	Same as above, but with Male Pull-apart Plug and Cable Assembly	3575-181
C	Breakaway Sub-Assembly w/o Plug (consists of items 1, 2, 3, 5, 6, 7 and 8 below)	3575-185
D	As Ref. C, but with Male Plug Assembly (consists of items 1, 2, 3, 5, 6, 7, 8, 9 and 10 below)	3575-187
	REPLACEMENT PARTS	
1	Arm Adapter Sleeve	38-0026-44-2
2	Shear Bolt Assembly	3575-170-1
2A	Shear Bolt Assembly for high wind areas	3575-201-1
3	Sleeve Support Weldment	3575-176
4	Adapter Bracket	38-0026-43
5	Hex Head Cap Screw, 7/16-14 x 1" and 7/16" Lock Washer	
6	Hex Head Bolt, 3/8-16 x 1¼" and Lock Nut	
7	Snap Bushing	3575-161
	PARTS NOT SHOWN	
8	Socket Head, Dog Point Set Screw, 7/16-14 x 1"	
9	Male Pull-apart Plug and Cable Assembly	38-0026-121
10	Strain Relief Bushing for Pull-apart Plug	3575-160

BREAKAWAY ADAPTER FOR MODEL 10 SIGNALS
(Use with 7" dia. Gate Lights)

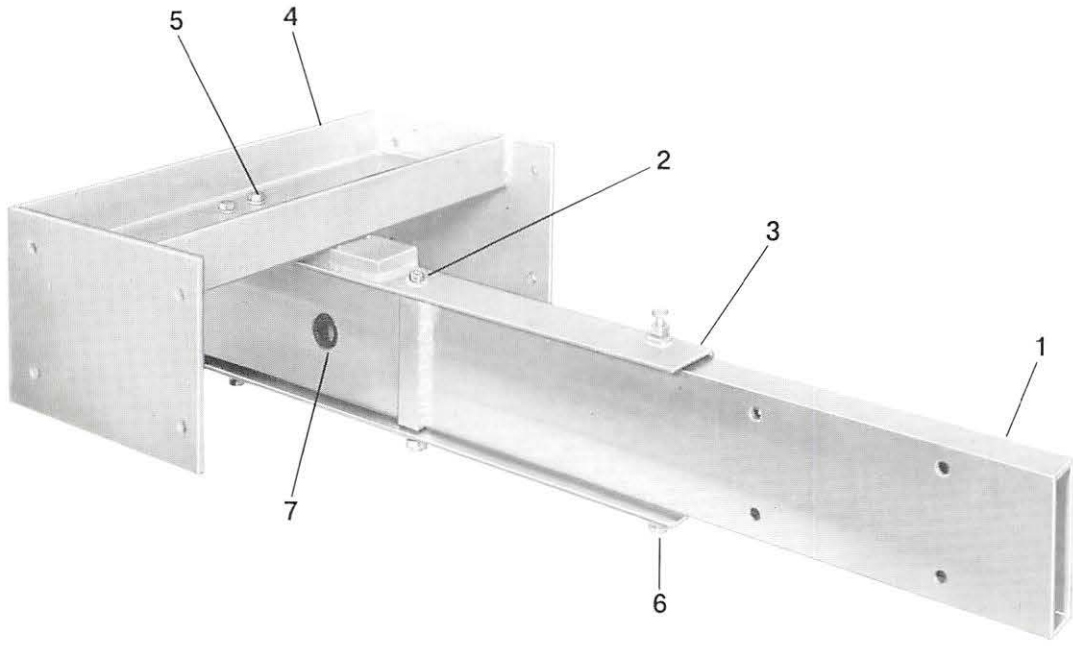


ORDERING REFERENCES

Breakaway Adapter for Model 10 Signals and other mast-mounted crossing gate signals using Type 1592 (7" dia.) Gate Lights. For arms to 26 feet in length. Adapters with and without male plug and cable assembly listed below.

Reference	Description	Piece No.
A	Adapter, complete w/o Male Pull-apart Plug and Cable Assembly	3575-179
B	As above, but with Male Pull-apart Plug and Cable Assembly	3575-183
C	Breakaway Sub-Assembly w/o Plug (consists of items 1, 2, 3, 5, 6, 7 and 8 below)	3575-185
D	As Ref. C, but with Male Plug Assembly (consists of items 1, 2, 3, 5, 6, 7, 8, 9 and 10 below)	3575-187
	REPLACEMENT PARTS	
1	Arm Adapter Sleeve	38-0026-44-2
2	Shear Bolt Assembly	3575-170-1
2A	Shear Bolt Assembly for high wind areas	3575-201-1
3	Sleeve Support Weldment	3575-176
4	Adapter Bracket	38-0026-43
5	Hex Head Cap Screw, 7/16-14 x 1" and 7/16" Lock Washer	
6	Hex Head Bolt, 3/8-16 x 1¼" and Lock Nut	
7	Snap Bushing	3575-161
11	Spacer	38-0026-142
	PARTS NOT SHOWN	
8	Socket Head, Dog Point Set Screw, 7/16-14 x 1"	
9	Male Pull-apart Plug and Cable Assembly	38-0026-121
10	Strain Relief Bushing for Pull-apart Plug	3575-160

BREAKAWAY ADAPTER FOR PEDESTAL-TYPE GATE SIGNALS



ORDERING REFERENCES

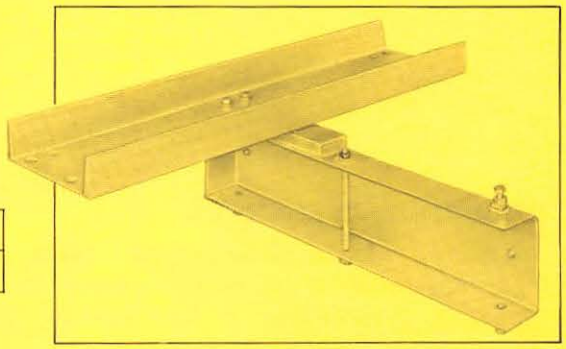
Breakaway Adapter for pedestal-type crossing gate signals. For arms to 26 feet in length. Adapters with and without male plug and cable assembly listed below.

Reference	Description	Piece No.
A	Adapter, complete w/o Male Pull-apart Plug and Cable Assembly	3575-178
B	As above, but with Male Pull-apart Plug and Cable Assembly	3575-182
C	Breakaway Sub-Assembly w/o Plug (consists of items 1, 2, 3, 5, 6, 7 and 8 below)	3575-185
D	As Ref. C, but with Male Plug Assembly (consists of items 1, 2, 3, 5, 7, 9 and 10 below)	3575-187
	REPLACEMENT PARTS	
1	Arm Adapter Sleeve	38-0026-44-2
2	Shear Bolt Assembly	3575-170-1
2A	Shear Bolt Assembly for high wind areas	3575-201-1
3	Sleeve Support Weldment	3575-176
4	Adapter Bracket	38-0026-91
5	Hex Head Cap Screw, 7/16-14 x 1" and 7/16" Lock Washer	
6	Hex Head Bolt, 3/8-16 x 1¼" and Lock Nut	
7	Snap Bushing	3575-161
	PARTS NOT SHOWN	
8	Socket Head, Dog Point Set Screw, 7/16-14 x 1"	
9	Male Pull-apart Plug and Cable Assembly	38-0026-121
10	Strain Relief Bushing for Pull-apart Plug	3575-160

BREAKAWAY ADAPTERS FOR ALUMINUM/FIBERGLASS ROADWAY ARMS AND MAINTENANCE PARTS

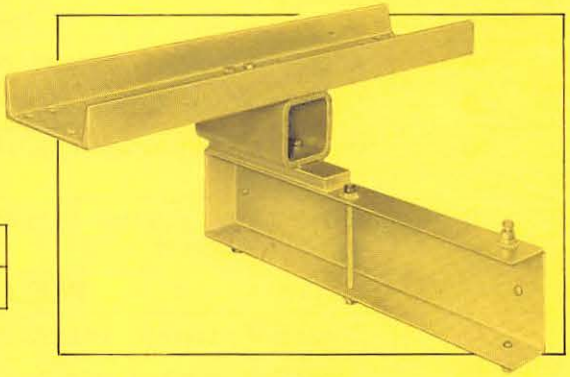
Adapters with and without male pull-apart plug and cable assemblies are listed below. Plug matches female connector furnished on certain W-C-H aluminum/fiberglass gate arms.

For Model 10 Crossing Gate Signals and other mast-mounted crossing gates using Type 1590 or Type 1591 Gate Lights.



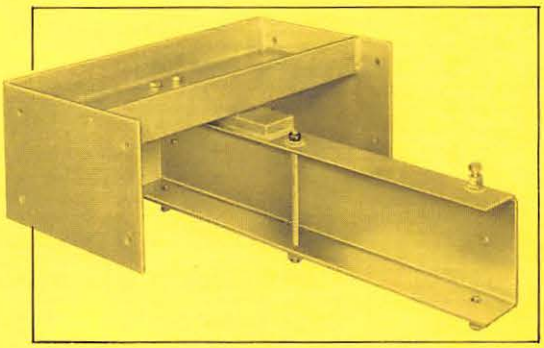
	ORDERING REFERENCE
W/O Plug	3575-250
With Plug	3575-253

For Model 10 Crossing Gate Signals and other mast-mounted crossing gates using Type 1592 Gate Lights (7" dia.).



	ORDERING REFERENCE
W/O Plug	3575-252
With Plug	3575-255

For pedestal type crossing gate signals.



	ORDERING REFERENCE
W/O Plug	3575-251
With Plug	3575-254

See pages 3-412 thru 3-414 for details of above adapters and for maintenance parts ordering references.

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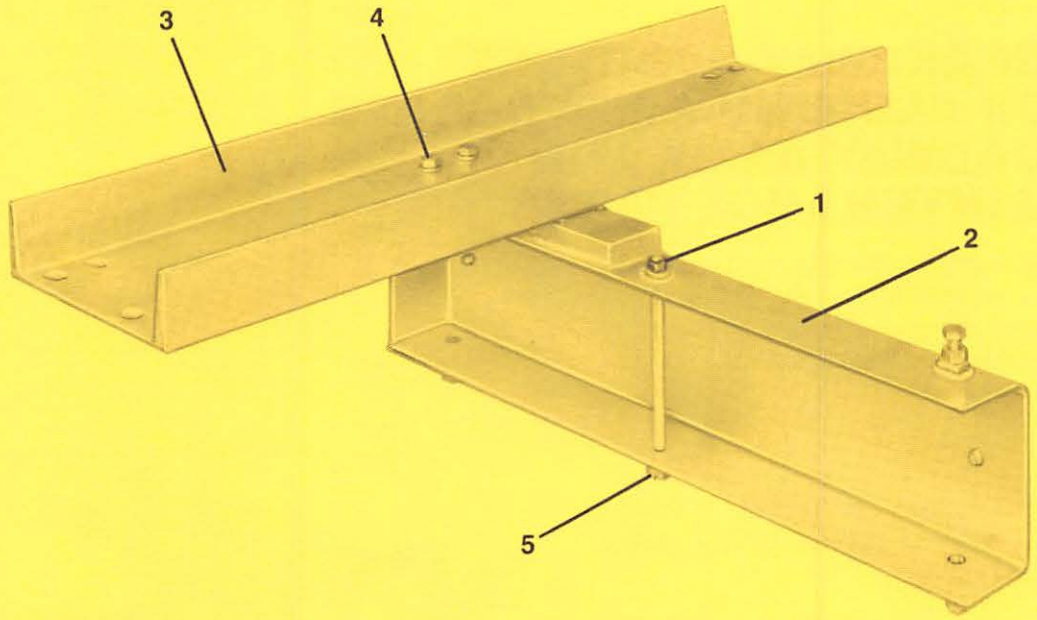
ALUMINUM/FIBERGLASS GATE ARM

BREAKAWAY ADAPTER FOR MODEL 10 SIGNALS
(Use with 4″ Dia. Gate Lights)



ORDERING REFERENCES

Breakaway Adapter for Model 10 Signals and other mast-mounted crossing gate signals using Type 1590 (fresnel lens) or Type 1591 (4″ dia.) Gate Lights. For arms to 33 feet in length. Adapter with and without male plug and cable assembly listed below.

Reference	Description	Piece No.
A	Adapter, complete w/o Male Pull-apart Plug and Cable Assembly	3575-250
B	Same as above, but with Male Pull-Apart Plug and Cable Assembly	3575-253
C	Breakaway Sub-Assembly w/o Plug (consists of items 1, 2, 4, 5, 6 below)	3575-248
D	As Ref. C, but with Male Plug Assembly (consists of items 1, 2, 4, 5, 6, 7, 8 below)	3575-249
	REPLACEMENT PARTS	
1	Shear Bolt Assembly for arms to 26′ in length	3575-170-1
1A	Shear Bolt Assembly for arms 27′-33′ in length	3575-201-1
2	Sleeve Support Weldment	3575-176
3	Adapter Bracket	38-0026-43
4	Hex Head Cap Screw, $^{7}/_{16}$-14 x 1″ and $^{7}/_{16}$″ Lock Washer	
5	Hex Head Bolt, $^{3}/_{8}$-16 x 1¼″ and Lock Nut	
	PARTS NOT SHOWN	
6	Socket Head, Dog Point Set Screw, $^{7}/_{16}$-14 x 1″	3575-256
7	Male Pull-apart Plug and Cable Assembly	38-0026-121
8	Strain Relief Bushing for Pull-apart Plug	3575-160

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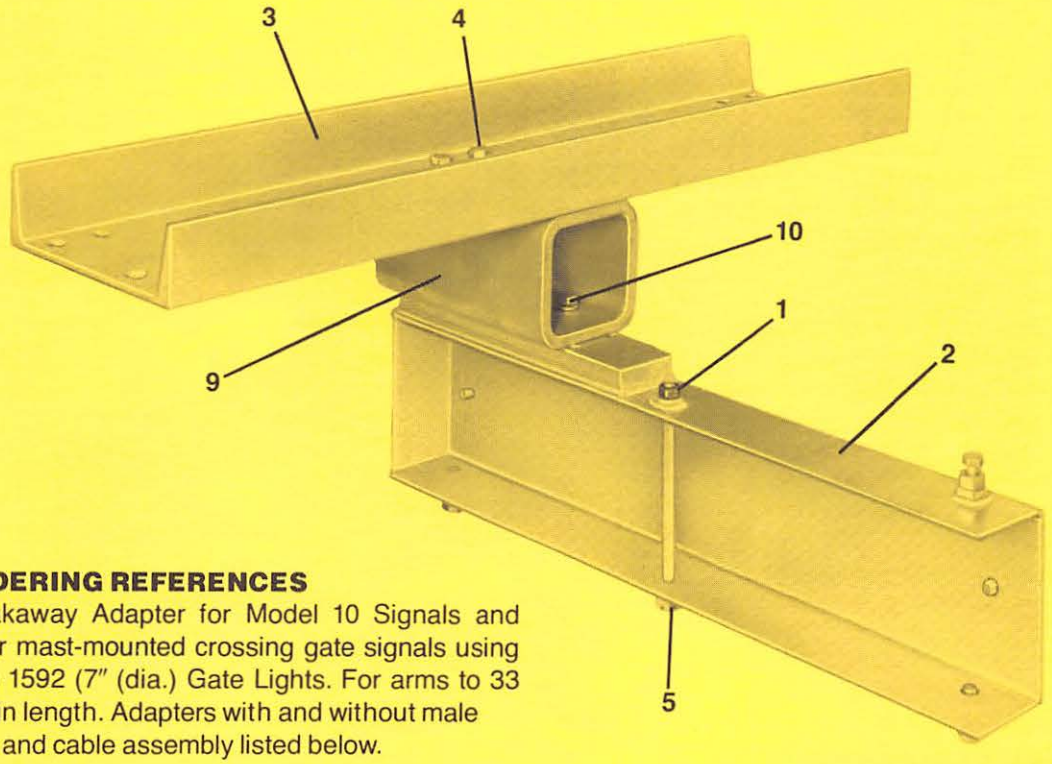
ALUMINUM/FIBERGLASS GATE ARM

BREAKAWAY ADAPTER FOR MODEL 10 SIGNALS
(Use with 7″ Dia. Gate Lights)



ORDERING REFERENCES

Breakaway Adapter for Model 10 Signals and other mast-mounted crossing gate signals using Type 1592 (7″ (dia.) Gate Lights. For arms to 33 feet in length. Adapters with and without male plug and cable assembly listed below.

Reference	Description	Piece No.
A	Adapter, complete w/o Male Pull-apart Plug and Cable Assembly	3575-252
B	As above, but with Male Pull-apart Plug and Cable Assembly	3575-255
C	Breakaway Sub-Assembly w/o Plug (consists of items 1, 2, 5, 6 and 10 below)	3575-248
D	As Ref. C, but with Male Plug Assembly (consists of items 1, 2, 5, 6, 7, 8, and 10 below)	3575-249
	REPLACEMENT PARTS	
1	Shear Bolt Assembly for arms to 26′ in length	3575-170-1
1A	Shear Bolt Assembly for arms 27′-33′ in length	3575-201-1
2	Sleeve Support Weldment	3575-176
3	Adapter Bracket	38-0026-43
4	Hex Head Cap Screw, 7/16-14 x 1″ and 7/16″ Lock Washer	
5	Hex Head Bolt, 3/8-16 x 1¼″ and Lock Nut	
9	Spacer	38-0026-142
10	Same as Ref. 4	
	PARTS NOT SHOWN	
6	Socket Head, Dog Point Set Screw, 7/16-14 x 1″	3575-256
7	Male Pull-apart Plug and Cable Assembly	38-0026-121
8	Strain Relief Bushing for Pull-apart Plug	3575-160

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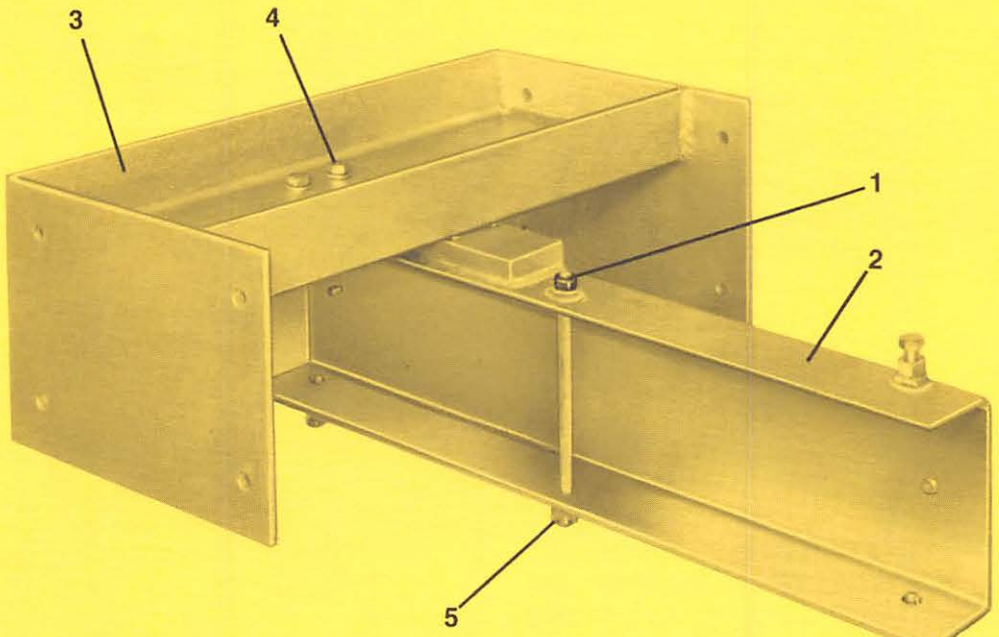
ALUMINUM/FIBERGLASS GATE ARM

BREAKAWAY ADAPTER FOR PEDESTAL-TYPE GATE SIGNALS



ORDERING REFERENCES

Breakaway Adapter for pedestal-type crossing gate signals. For arms to 33 feet in length. Adapters with and without male plug and cable assembly listed below.

Reference	Description	Piece No.
A	Adapter, complete w/o Male Pull-apart Plug and Cable Assembly	3575-251
B	As above, but with Male Pull-apart Plug and Cable Assembly	3575-254
C	Breakaway Sub-Assembly w/o Plug (consists of items 1, 2, 4, 5, 6 below)	3575-248
D	As Ref. C, but with Male Plug Assembly (consists of items 1, 2, 4, 5, 6, 7, and 8 below)	3575-249
	REPLACEMENT PARTS	
1	Shear Bolt Assembly for arms to 26′ in length	3575-170-1
1A	Shear Bolt Assembly for arms 27′-33′ in length	3575-201-1
2	Sleeve Support Weldment	3575-176
3	Adapter Bracket	38-0026-91
4	Hex Head Cap Screw, 7/16-14 x 1″ and 7/16″ Lock Washer	
5	Hex Head Bolt, 3/8-16 x 1¼″ and Lock Nut	
	PARTS NOT SHOWN	
6	Socket Head, Dog Point Set Screw, 7/16-14 x 1″	3575-256
7	Male Pull-apart Plug and Cable Assembly	38-0026-121
8	Strain Relief Bushing for Pull-apart Plug	3575-160

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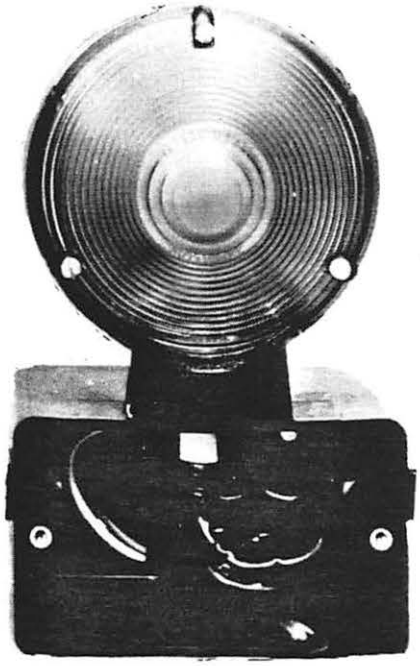
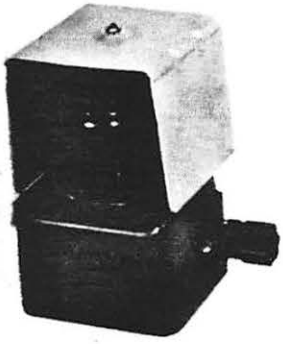
Type 1592, showing assembled unit



Type 1591, with cover off showing HEAVY-WALL construction



The Ugly One (Type 1590)

TRY THE GATE LIGHTS WITH A DIFFERENCE

- **Rugged Heavy-Wall (.12″), non-conductive glass fiber-reinforced plastic box.**
- **Anti-turn flange holds light head in place.**
- **The Ugly One, for extra-high vandalism areas.**

Especially with aluminum or aluminum/fiberglass gate arms, grounds in gate lights can be a problem. W-C-H has solved this problem with our new HEAVY-WALL plastic gate light box. We have also addressed vandalism with the Anti-turn flange that holds the light head in place. For the really high vandalism areas, try our "Ugly One" (type 1590). It is especially rugged, and so ugly no one wants to steal it. Prompt shipments are made from stock.

DESCRIPTION	ORDERING REFERENCE (set of 3)
4″ Dia. Flat Gate Light	1591-50
7″ Dia. Flat Gate Light	1592-50
The Ugly One	1590-50

WC Hayes

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GATE LIGHTS AND MAINTENANCE PARTS

TYPE 1590

The Type 1590 Gate Light is equipped with a 3⅝" diameter, 360 degree, Red Fresnel Lens, shielded to provide indication to cross traffic only. The shield is adjustable to any position required to shut off the light beam along the railroad. It can be removed and discarded if desired. Each light unit weighs 1¼ pounds with shield. The light is attached to the gate arm by two screws or machine bolts through holes accessible with the cover removed. Lamp socket accommodates S.C.B.B. lamps having 1¼" light center length and S-8 and S-11 bulb. Wire nuts are provided to secure gate arm cable to wires from the socket. Cable grips of appropriate diameter are provided with the junction box. The base housing and cover are of molded, high-impact, "Cycolac", the Fresnel Lens is of polycarbonate plastic. All necessary mounting hardware is furnished.

Description	Piece No.
Set of three Type 1590 Gate Lights	**1590-50**

TYPE 1591

Type 1591 Gate Light is equipped with a 4⅛" diameter, red bullseye lens. Due to the relative flatness of the shape of the gate light, virtually no light beam is directed toward oncoming trains. Each light weighs approximately 1¾ pounds. The light is attached to the gate arm by two screws or machine bolts through holes accessible with the junction box cover removed. Lamp socket accommodates S.C.B.B. lamps having 1¼" light center length and S-8 or S-11 bulb. Wire nuts are provided to secure gate arm cable to wires from the socket. Cable grips of appropriate diameter are provided with the junction box. The lens is cast polycarbonate plastic. All necessary mounting hardware is furnished.

Description	Piece No.
Set of three Type 1591 Gate Lights	**1591-50**

TYPE 1592

Type 1592 Gate Light is equipped with a 7" diameter, red hi-intensity lens. Due to the relative flatness of the shape of the gate light, virtually no light beam is directed toward oncoming trains. Each light weighs approximately 1⅝ pounds. The light is attached to the gate arm by two screws or machine bolts through holes accessible with the junction box cover removed. Lamp socket accommodates S.C.B.B. lamps having 1¼" light center length and S-8 or S-11 bulb. Wire nuts are provided to secure gate arm cable to wires from the socket. Cable grips of appropriate diameter are provided with the junction boxes. The light frame and lens are cast polycarbonate plastic. All necessary mounting hardware is furnished.

Description	Piece No.
Set of three Type 1592 Gate Lights	**1592-50**

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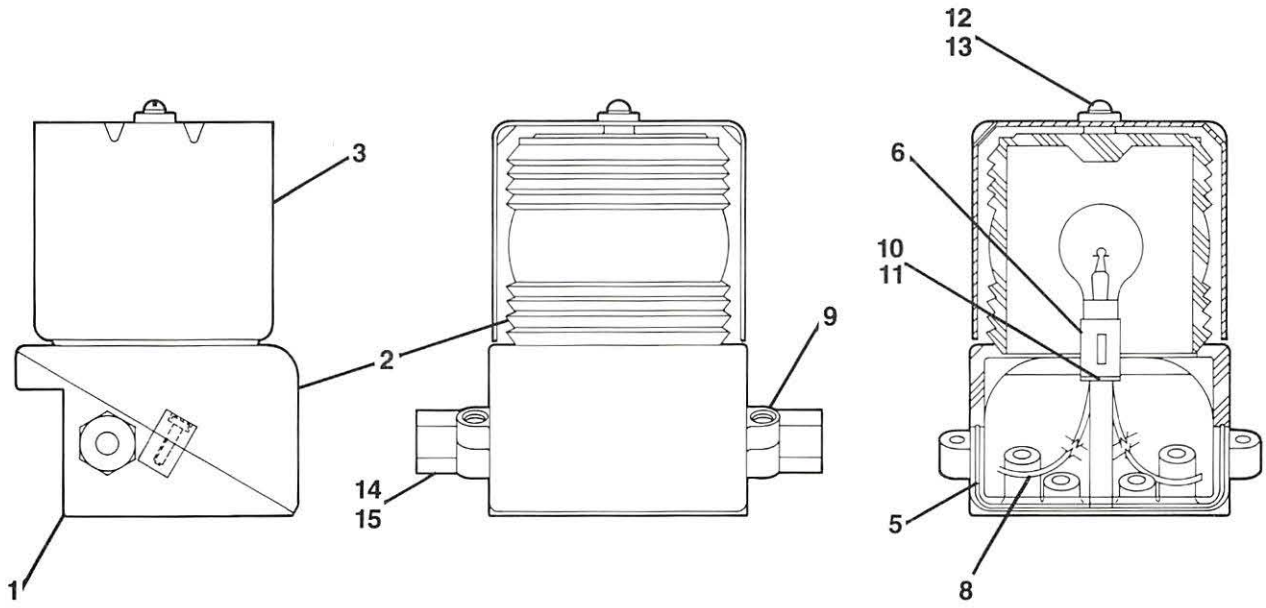
TYPE 1590 GATE LIGHT



Ref. No.	Description	Piece No.
A	Tip Light (one cable grip, one hole plug)	1590-A
B	Mid and Butt Light (Two cable grips)	1590-B
	REPLACEMENT PARTS	
1	Molded Base with Gasket only	1590-1C
2	Molded Cover and Lens Assembly	1590-7
3	Aluminum Shield	1590-4
5	Gasket Only	1590-6A
6	Lamp Socket	90809
8	Wire Leads	
9	Screw, No. 10-24x½" lg. Fil. Hd., Brass, N.P.	
10	Screw, No. 5-40x½" lg. Fil. Hd., Brass, N.P.	
11	Lockwasher, No. 5, Stl., Cad Pl.	
12	Screw, No. 10-24x¼" lg. Rd. Hd., Brass, N.P.	
13	Washer, External Star, No. 10, Cad Pl.	
14	Cable Grip	1590-35-A
15	Ferrule Nut	1590-35-B
16	Hole Plug, Plastic (Not shown)	1590-9
17	Hardware Kit (Not shown)	1590-25

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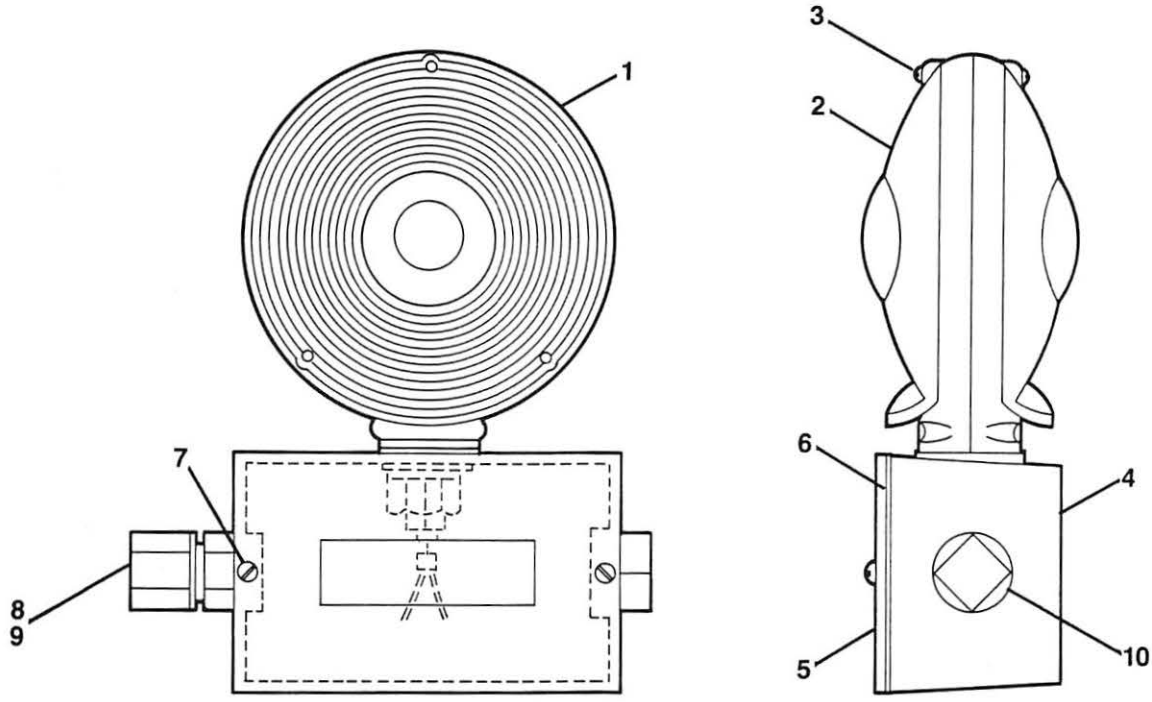
TYPE 1591 GATE LIGHT



Ref. No.	Description	Piece No.
A	Tip Light (one cable grip, one hole plug)	1591-3
B	Mid and Butt Light (two cable grips)	1591-4

REPLACEMENT PARTS

1	Light Head Assy.	90837
2	Lens Only	90837-1
3	6-32 x 5/8" Rd. Hd. Mach. Scr.	
4	Light Junction Box	1591-30-M
5	Light Junction Box Cover	1591-31
6	Gasket	1591-32
7	8-32 x 3/8" Rd. Hd. Mach. Scr.	
8	Male Connector	1590-35-A
9	Ferrule Nut	1590-35-B
10	Hole Plug	1590-9
11	Hardware Kit (Not shown)	1590-25

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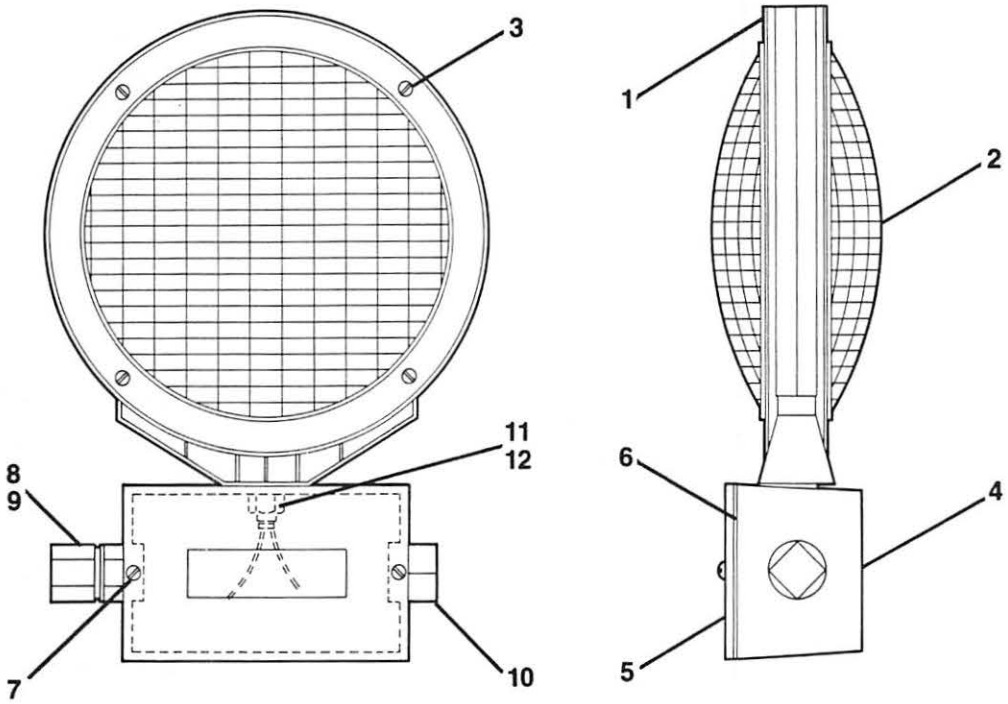
TYPE 1592 GATE LIGHT



Ref. No.	Description	Piece No.
A	Tip Light (one cable grip, one hole plug) shown	1592-3
B	Mid and Butt Light (two cable grips)	1592-4
	REPLACEMENT PARTS	
1	Light Frame and Socket	90847-2
2	Lens, Only	90847-1
3	8-32 x ¼" Rd. Hd. Mach. Scr.	
4	Light Junction Box	1591-30-M
5	Light Junction Box Cover	1591-31
6	Gasket	1591-32
7	8-32 x ⅜" Rd. Hd. Mach. Scr.	
8	Male Connector	1590-35-A
9	Ferrule Nut	1590-35-B
10	Hole Plug	1590-9
11	7/16" Ext. Lockwasher	
12	7/16" Elastic Stop Nut	
13	Hardware Kit (Not shown)	1590-25

WESTERN-CULLEN-HAYES, Inc.
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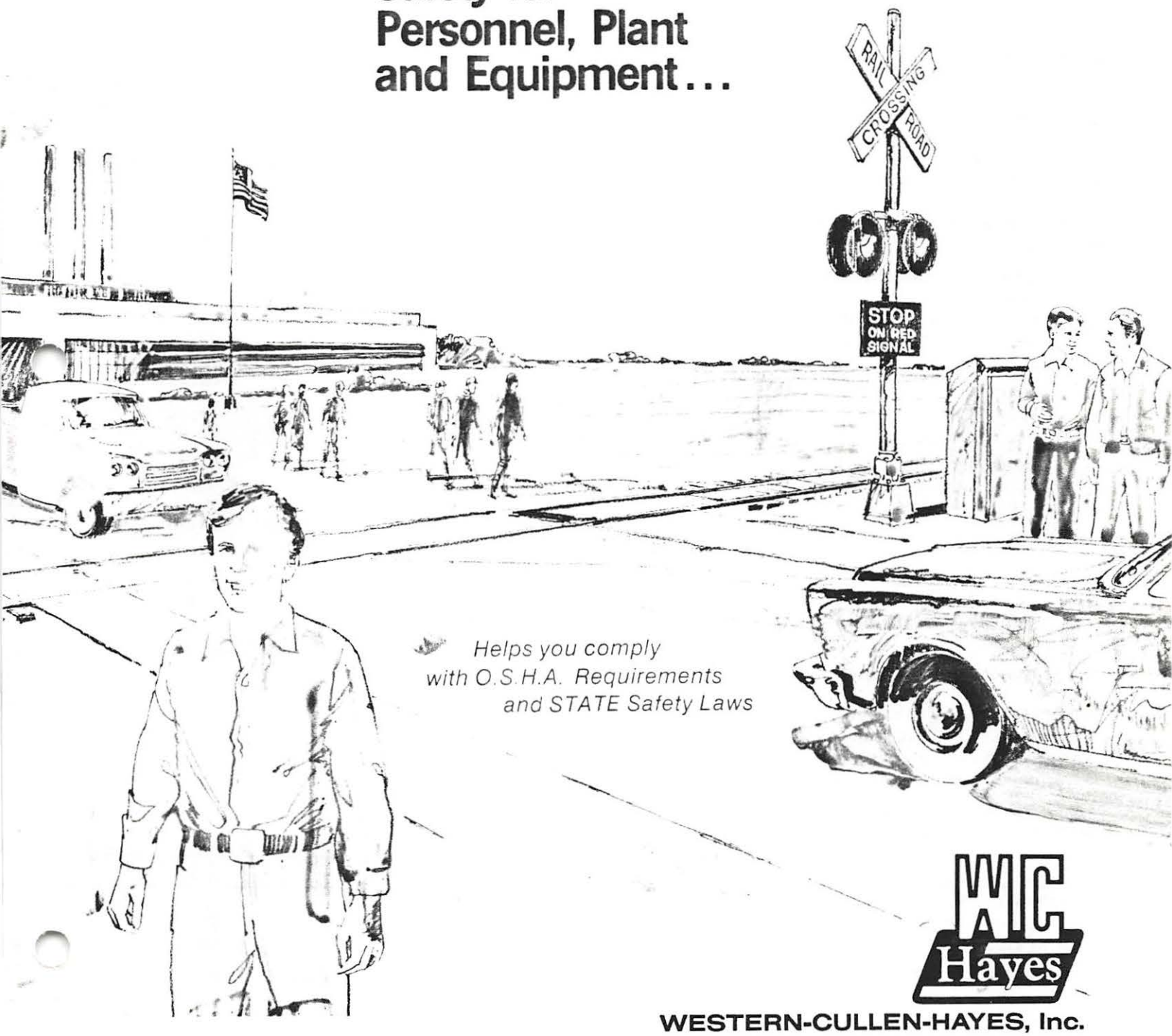
WESTERN-CULLEN-HAYES Complete CROSSING WARNING SYSTEMS

Assure Maximum Safety for Personnel, Plant and Equipment...



Helps you comply with O.S.H.A. Requirements and STATE Safety Laws

WC Hayes

WESTERN-CULLEN-HAYES, Inc.

WESTERN-CULLEN-HAYES RAILROAD CROSSING WARNING SYSTEMS for PEOPLE, PLANT and EQUIPMENT

Growing concern and strict legislation for safety and security in industrial operations has directed increased attention for road—railroad crossing warning on plant sites. WESTERN-CULLEN-HAYES has more than 50 years of experience in highway crossing warning plus a reputation for the most dependable products in the field.

Here are a few of the products and services we can offer you.

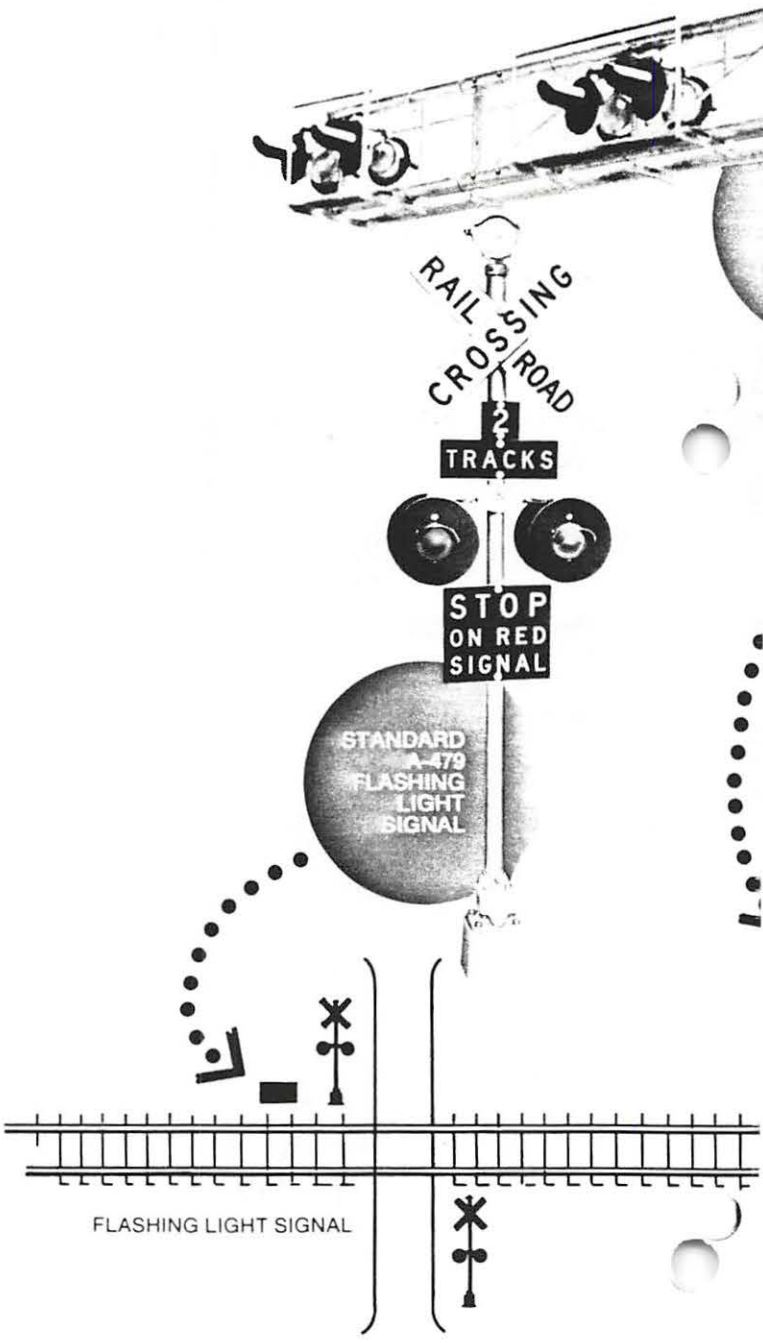
- Complete manually operated Crossing Warning Packages for simple installation by your own plant electricians and maintenance personnel.
- Special Engineering Service to design safe crossing systems tailored to your specific needs.
- Train-Activated Crossing Warning Equipment—including latest design combining solid state electronics with proven railroad hardware.
- Automatic Door Protection Systems with Door Activated Derails, Warning Lights and Audible Signals—designed to prevent runaway cars from entering plant or heavy traffic areas.
- Installation Service or Installation Supervision (optional at additional cost).

WESTERN-CULLEN-HAYES Products and Services can be tailored to solve almost any rail—highway crossing problem and comply with government agency requirements.

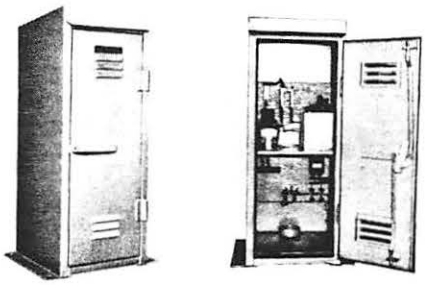
Take advantage of WESTERN-CULLEN-HAYES experience and capabilities, call or write:

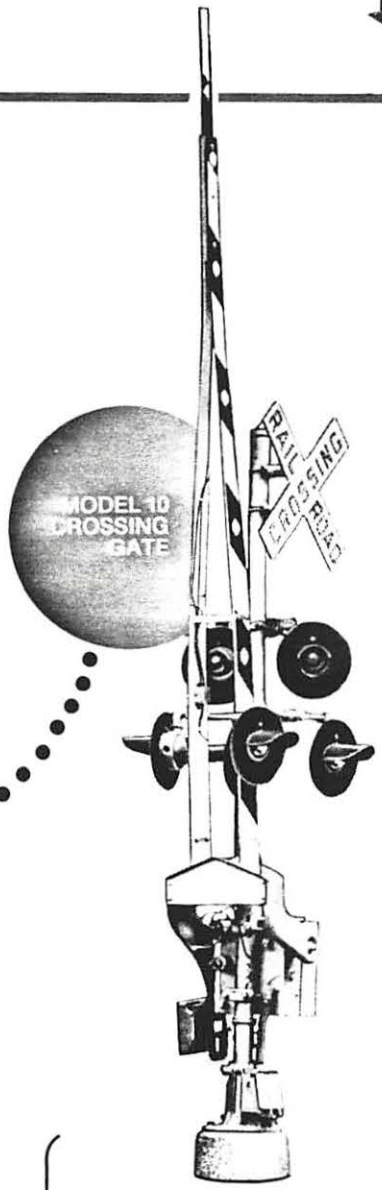
Highway Crossing Signal System Specialist
WESTERN-CULLEN-HAYES, INC.
2700 West 36th Place
Chicago, Illinois 60632
Area Code 312—254-9600

...for specific information on your needs.

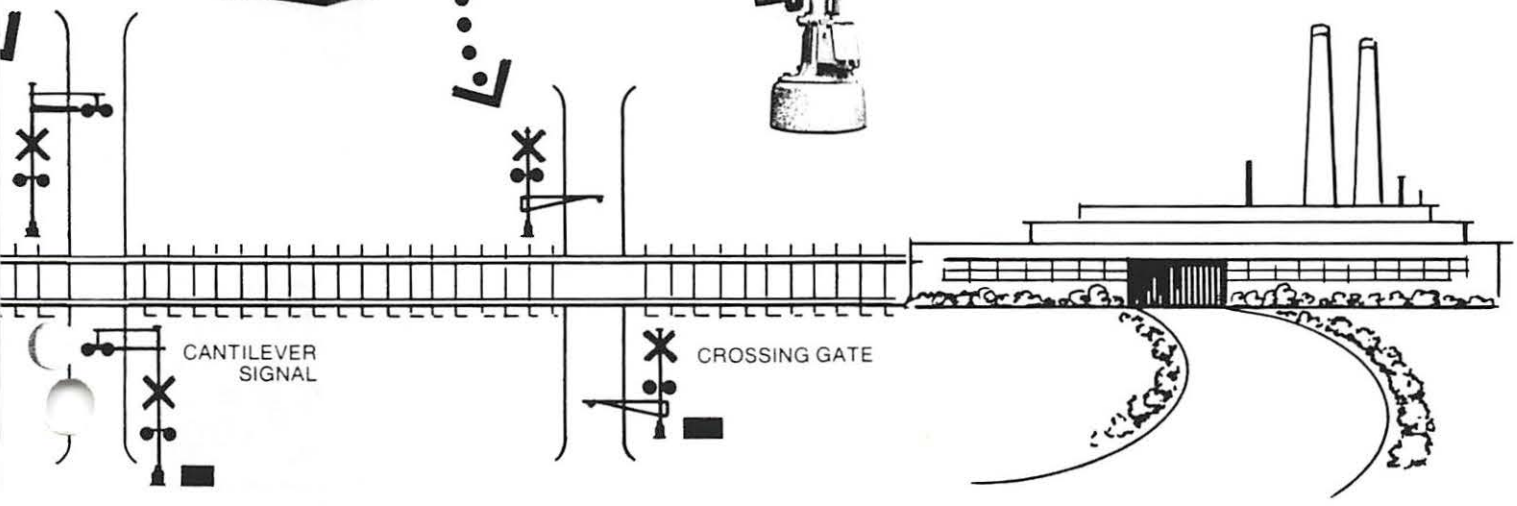


- W-C-H factory wired cases are ready for cable installation
- All signal cases factory tested to assure dependable operation
- Extra heavy construction protects contents against vandalism

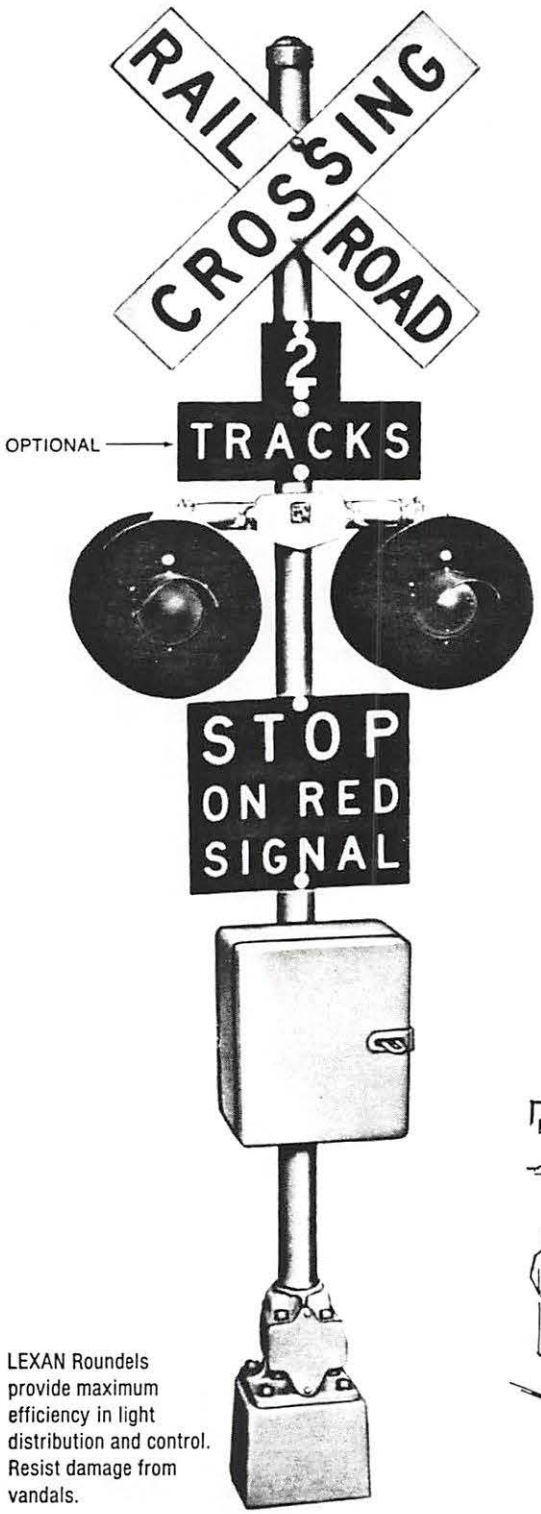




- Rugged, all aluminum signals require minimum maintenance
- SPECIAL ROUNDELS direct and concentrate maximum signal brightness in area traveled by approaching motorists or pedestrians
- Lights available in 8⅜" or 12"



Manual Control Industrial CROSSING WARNING SYSTEMS



LEXAN Roundels provide maximum efficiency in light distribution and control. Resist damage from vandals.

- **Lights Available in 8⅜" or 12"**
- **Provides SAFE, Dependable Warning at Economical Cost!**
- **Helps comply with new safety regulations.**
- **Factory-wired control case for installation by plant maintenance personnel, or W-C-H.**
- **Manual Control**

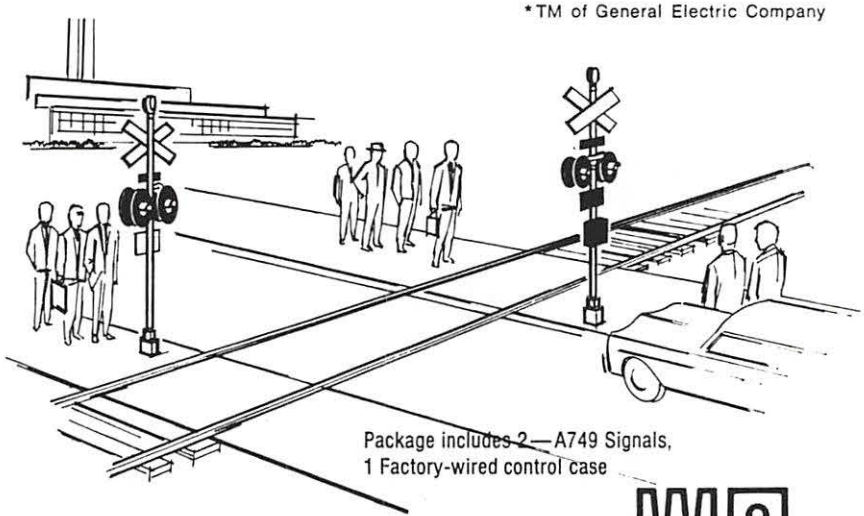
Rugged "lifetime" aluminum construction (from base to pinnacle) requires minimum maintenance. The W-C-H Flashing Light assembly, recognized as standard of the railroad industry is included in the system and equipped with impact-resistant "LEXAN"* type roundels.

Unique characteristics of the Roundels direct and concentrate maximum signal brightness in area traveled by approaching motorists or pedestrians.

Comprehensive package is factory wired, shipped ready to install by your own personnel or for installation by W-C-H trained crossing specialists.

Offers you an efficient safety package combining increased crossing warning and reliable performance for an economical price.

*TM of General Electric Company



Package includes 2—A749 Signals, 1 Factory-wired control case

WC Hayes

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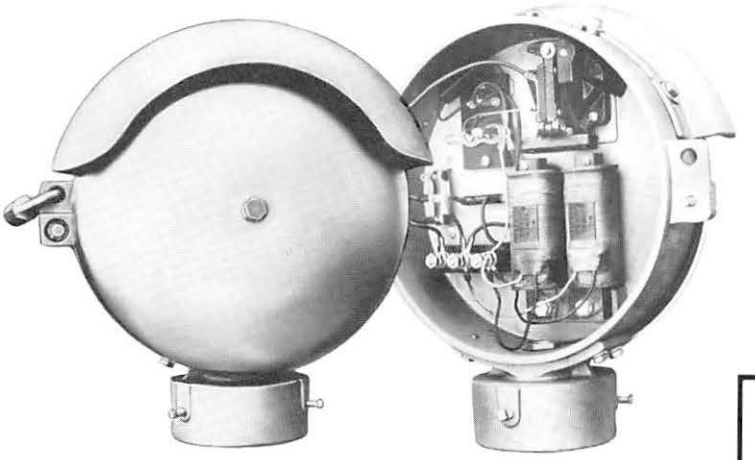
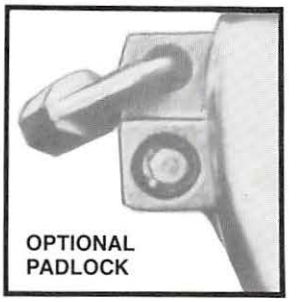
WESTERN-CULLEN-HAYES
"Model 0333" HIGHWAY CROSSING BELL





Western-Cullen presents a refined and improved highway crossing bell. Our model 333 incorporates the design features of our earlier Model 222 with the addition of an adjustable ringing rate (average 200 strokes per minute), a condenser as a standard item, an improved intensity and a special locking feature which allows the bell cover to be secured with a standard AAR hex nut wrench and a padlock (padlock optional). See photo. Loud and soft tone hammers are available.

Constructed of lightweight, rust-proof cast aluminum, the Model 0333 Bell is a low-maintenance product. It is adaptable to any signal, can be mounted on the mast or wall.

SPECIFICATIONS

Conforms to applicable sections of A.A.R. Signal Specification 3.2.60, Highway Crossing Bell. Operating instructions and wiring schematic are included on the inside cover of every bell.

Voltage–6-16 VDC
Audio Output–Approx. 90 dbA @ 10 feet (Loud Tone)
Power–600 mA
Dimensions–1'3" H x 1'2" W x 7" D
Weight–Approx. 27 pounds

HOW TO ORDER

Ref. No.	Description	Piece No.
A	Model 0333 Bell, for top of post or pipe mounting	
	For 4" ID pipe, 4½" OD pole	~~0333CR~~
	For 5" ID pipe, 5⅝" OD pole 3 0333-CFR	~~0333FR~~
	For 6" ID pipe, 6¾" OD pole	0333HR
B	Model 0333 Bell, for wall or side-of-pole mounting	
	For wall mounting only	0333ARP
	For wall or side of 4½" OD pole mounting	0333ARP-4
	For wall or side of 5⅝" OD pole mounting	0333ARP-5
	For wall or side of 6¾" OD pole mounting	0333ARP-6

Specify: Loud or Soft Tone Hammer

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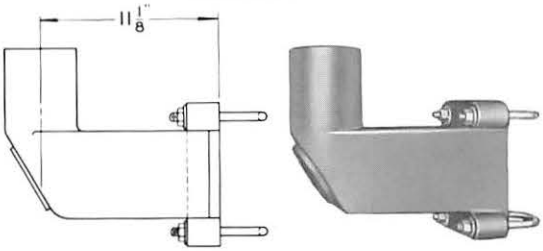
MOUNTING ACCESSORIES
For CR Version

Reference A



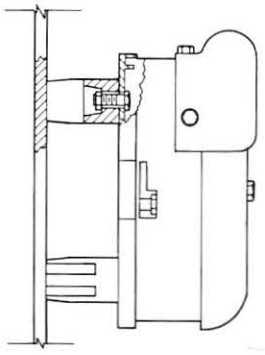
Reference B

Reference C

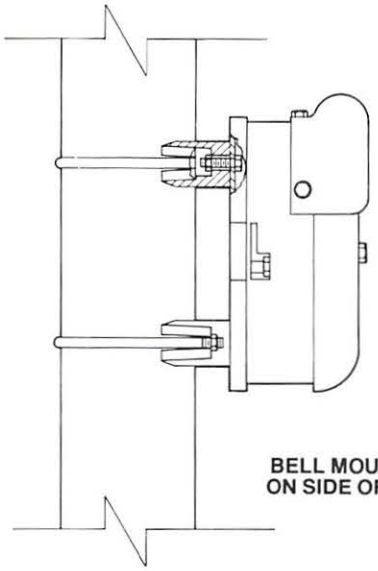
Special accessories are available for the Model 0333CR version (for top of 4" ID pipe mounting) of this bell. They permit the mounting of the bell in a variety of locations.

Ref. No.	Description	Piece No.
A	Gooseneck Bracket for mounting to:	
	3" ID pipe	873-27B
	3½" ID pipe	873-28B
	4" ID pipe	873-29B
	5" ID pipe	873-30B
	6" ID pipe	873-31B
	8" ID pipe	873-32B
B	Reducer 5" to 4" ID pipe	990-63
C	Flat Surface Mounting Adapter	216-2

MOUNTING APPLICATIONS
For ARP Version



BELL MOUNTED ON WALL



BELL MOUNTED ON SIDE OF PIPE

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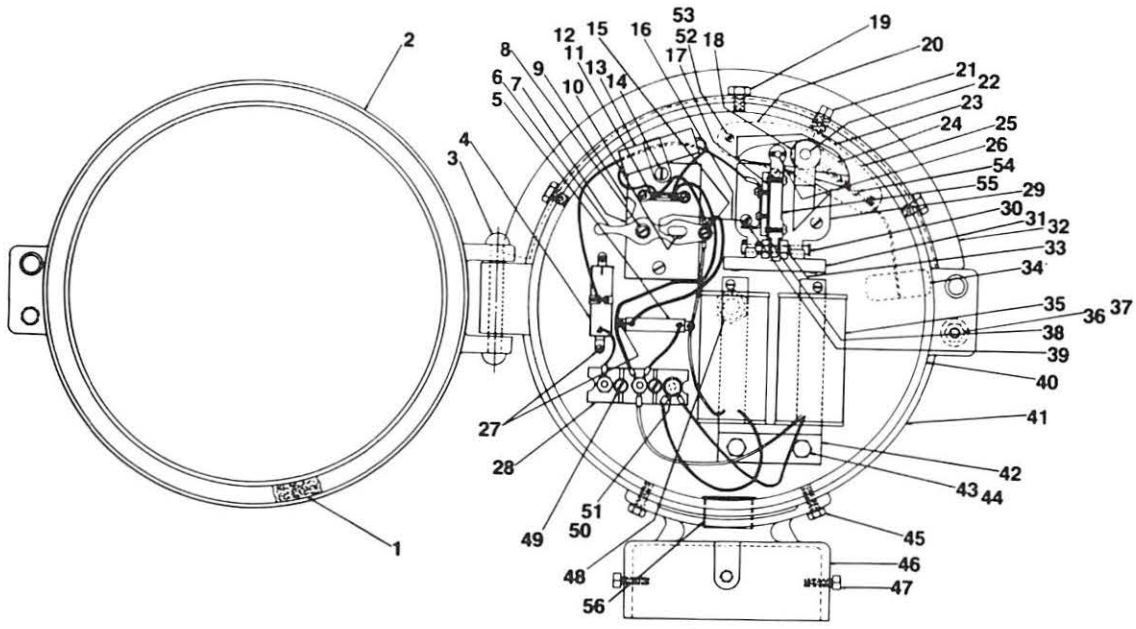
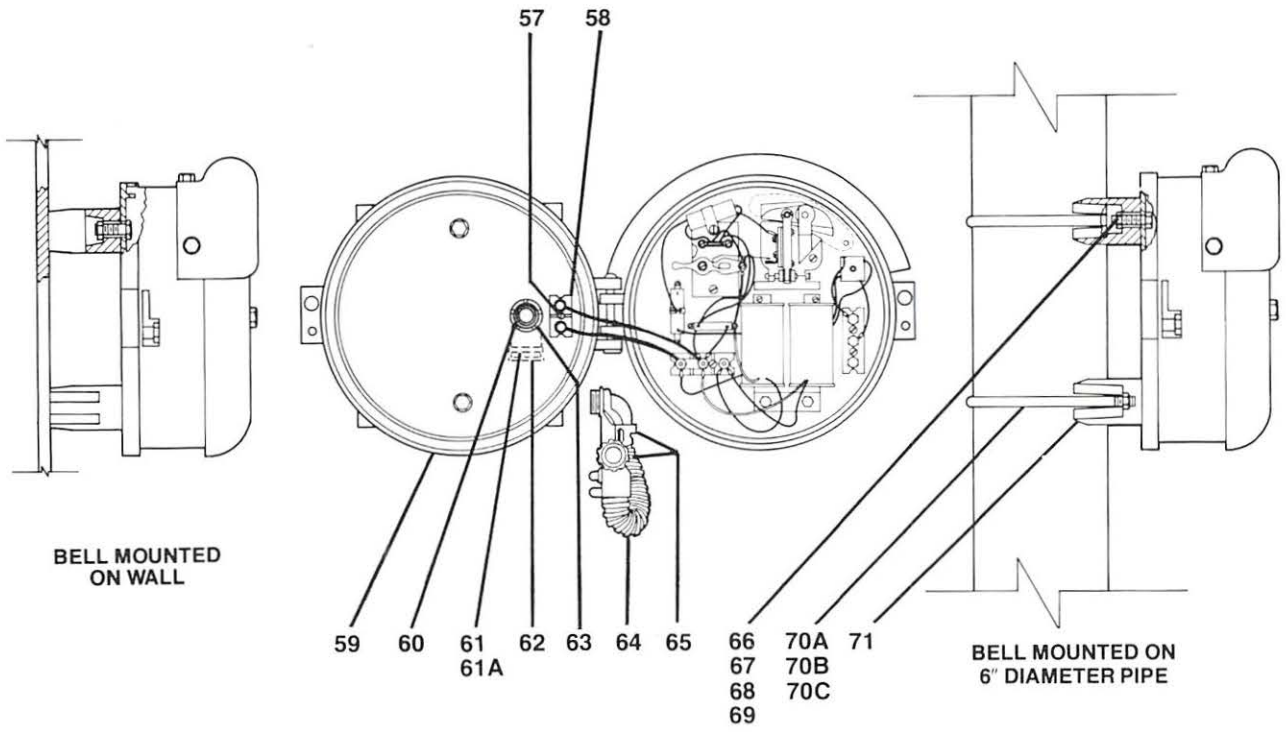
PARTS LIST FOR MODEL 0333 WARNING BELL FOR POST OR PIPE MOUNTING



Ref. No.	Description	Piece No.	Qty.
1	Cover Packing Strip	1217-2	1
2	Cover	1219-2M	1
3	3/8" Dia. x 3 1/2" Lg. Rd. Hd. Rivet		1
4	Adjustable Resistor	1210-42	1
5	Fixed Resistance	1235-4	1
6	Contact Finger Support	1209-14	1
7	Contact Block	1210-11	1
8	1/4"-20x1/2" Lg. Rd. Hd. Mach. Scr. Stl. With Washer	10708	1
9	Insulator	1249-16CA	1
10	#8-32x1/4" Lg. Rd. Hd. Mach. Scr.		1
11	Terminal Strip	1101-115	1
12	#6-32x3/8" Lg. Rd. Mach. Scr. Cad. Plt.		2
13	Condenser	1101-114	1
14	1/4"-20x7/8" Lg. Fil. Hd. Mach. Scr.		5
15	#8-32x3/8" Lg. RHMS & #8 Flat Washer		1
16	Contact Finger (With Silver Contacts)	1222-10	
16A	Contact Finger (With Platinum Contacts)	1222-10B	
17	Insulation Strip	1210-10	1
18	Packing Ring	1248-16	1
19	5/16"-18x5/8" Lg. Hex Hd. Cap Scr. With 5/16 Flat Washer		3
20	Left Hand Dust Guard	1248-12	1
21	1/4" Steel Pipe Plug		1
22	Oscillator Stud	1209-8	
23	Right Hand Dust Guard	1248-11	1
24	Oscillator w/Bushing, Clevis Pin and Cotter Pin	1209-13	1
25	Gasket	1248-15	1
26	Operating Clevis Pin With Cotter Pin	1209-16	1
27	#6-32x1/4" Lg. RHMS		4
28	Terminal Strip	2508-103	1
29	Movement Base	1209-1	1
30	Armature Pin Complete With Cotter Pin	1209-17	1

Ref. No.	Description	Piece No.	Qty.
31	Armature	1209-2	1
32	Rain Shield	1208-CA	1
33	Operating Link Pin Complete With Cotter Pin	1209-15	1
34	Hammer Complete With Reinforcement Springs (Loud Tone)	1210-17	1
34A	Hammer Complete with Reinforcement Springs (Soft Tone)	1210-20	1
35	Coil Pair	1231-6-X	1
36	5/16"-18x1" Lg. Hex Hd. Cap Scr.		1
37	Push Nut	970-45	1
38	Link Insulator	1210-4	1
39	Moving Contact (Silver Contact)	1210-5	1
39A	Moving Contact (Platinum Contact)	1210-5B	1
40	Case	1220-2M	1
41	Gong	1211	1
42	Core Assy.	1249-6A	1
43	5/16"-18x1 1/4" Lg. Hex Hd. Cap Scr.		2
44	5/16" Lockwasher		2
45	5/16"-18x3/4" Lg. Hex Hed. Cap. Scr. With 5/16" Lockwasher		2
46	Socket for 3" I.D. Pipe	1206-3B-CA	1
46A	Socket for 3 1/2" I.D. Pipe	1206-2B-CA	1
46B	Socket for 4" I.D. Pipe	1206-4B-CA	1
46C	Socket for 5" I.D. Pipe	1206-5B-CA	1
46D	Socket for 6" I.D. Pipe	1206-6B-CA	1
47	Set Screw 5/16"-18x3/4" Lg. Cup Pt. Cad. Plt.		2
48	1/2"-13x7/8" Lg. Hex Hd. Cap. Scr. and 1/2" Lockwasher		1
49	1/4"-20x7/8" Lg. Fil. Hd. Cap. Scr.		2
50	Insulating Cap	R-2000-1	1
51	Insulating Sleeve	R-2000-2B	1
52	#8-32x1/4" Lg. RHMS Scr.		2
53	#8 Flat Washer		2
54	Oscillator and Hammer Assy.	1215-1	1
55	Movement Base Assy. Complete	1215	1
56	3/4" Chase Nipple		1

MODEL "0333" ARP WARNING BELL
ADDITIONAL PARTS FOR WALL OR POLE SIDE MOUNT



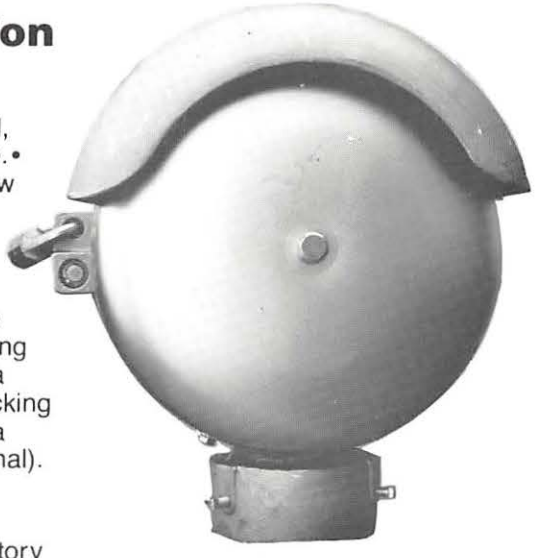
ADDITIONAL PARTS

ORDERING REFERENCES

Ref. No.	Description	Piece No.
57	1/4"-20 Slotted Screw, Fil. Hd. x 3/4" Lg. Cad. Plt.	
58	Terminal Block Assy	
59	Cover for Wall or Post Mount	1219-3M
60	Elbow Wire Outlet	
61	3/4" Street el	
61A	3/4" Pipe Nipple	
62	3/4" Chase Nipple	
63	3/4" Conduit Bushing	
64	3/4" Penflex Conduit x 18" Lg.	
65	3/4" 90° Squeeze Connector	
66	5/8"-11 Hex Hd. Bolt x 1 1/2" Lg. Cad. Plt.	
67	5/8"-11 Nut. Hex Hd. Cad. Plt.	
68	5/8" Flat Washer Cad. Plt.	
69	5/8" Lock Washer Cad. Plt.	
70A	U-Bolt 4" Pipe	3364-2-2X
70B	U-Bolt 5" Pipe	3364-5-5X
70C	U-Bolt 6" Pipe	3364-34-34X
71	Adapter Clamp	3364A1-1-1A

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632

Cast Aluminum, Lightweight, WESTERN-CULLEN-HAYES "Model 333-1" Special Application HIGHWAY CROSSING BELL.



• Operates on low voltage AC or DC • Adaptable to any signal, can be mounted on the mast or wall. • Adjustable ringing rate. • Special locking feature... • Dustproof and weatherproof, a low maintenance product.

ABOUT THE "333-1" Bell

Western-Cullen-Hayes presents a special application highway crossing bell. Our model 333-1 features low voltage DC and/or low voltage AC operation with an adjustable ringing rate (average 200 strokes per minute), an arc supressor as a standard item, an improved sound intensity and a special locking feature which allows the bell cover to be secured with both a standard AAR hex nut wrench and a padlock (padlock optional). See photo.

Constructed of lightweight, rust-proof cast aluminum. The operating mechanism used in the Model 333-1 has been factory tested at 8,000,000 operations with only one oiling.

OPERATION

W-C-H's Model 333-1 functions from 9 to 17 VDC or 10 to 19 VAC and is provided with an adjustable resistor for proper current operation, (600 Ma) over the acceptable voltage range.

SPECIFICATIONS

Conforms to appropriate sections of A.A.R. Signal Specification 3.2.60, Highway Crossing Bell. Operational instructions and wiring schematic are included on the inside cover of every bell.

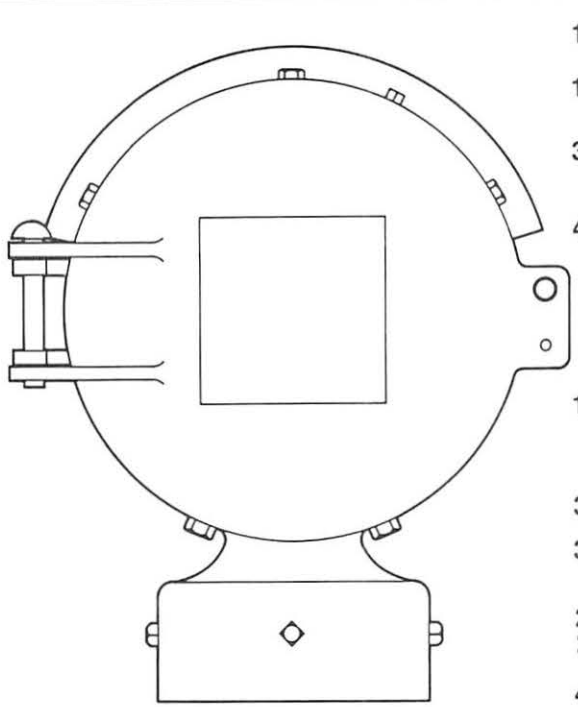
PHYSICAL DIMENSIONS OF BELL

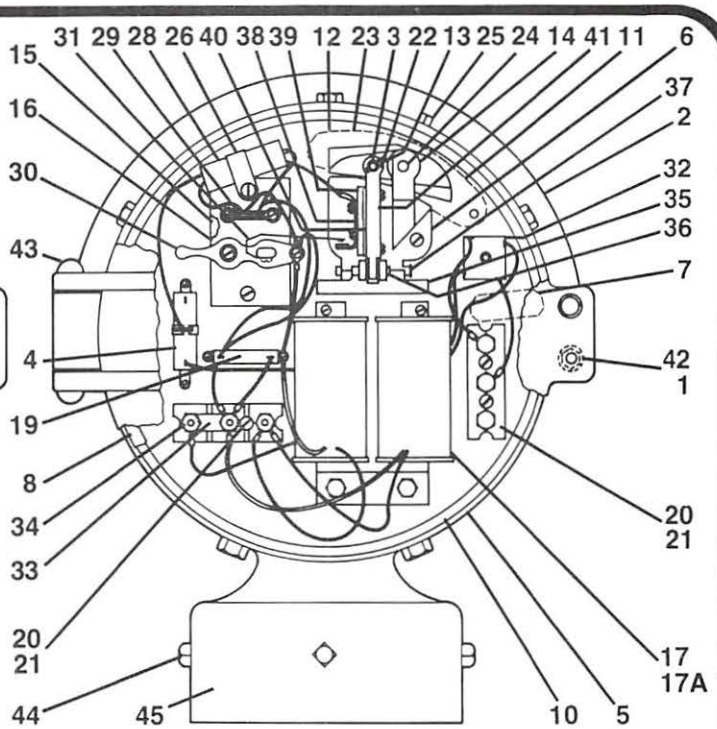
Height 1'-3"
Width 1'-2"
Depth 7"
Weight: Complete Bell approx. 27 lbs.

HOW TO ORDER

Ref. No.	Description	Piece No.
A	Model 0333-1 Bell, for top of post or pipe mounting. Operates on 9 to 16 VDC and/or 10 to 19 VAC.	
	For 4" ID pipe, 4½" OD pole	0333CR-1
	For 5" ID pipe, 5⅝" OD pole	0333FR-1
	For 6" ID pipe, 6¾" OD pole	0333HR-1
B	Model 0333-1 Bell, for wall or side-of-pole mounting. Operates on 9 to 16 VDC and/or 10 to 19 VAC.	
	For wall mounting only	0333ARP-1
	For wall or side of 4½" OD pole mounting	0333ARP-1-4
	For wall or side of 5⅝" OD pole mounting	0333ARP-1-5
	For wall or side of 6¾" OD pole mounting	0333ARP-1-6

HIGHWAY CROSSING BELL MODEL "333-1"
REPLACEMENT PARTS



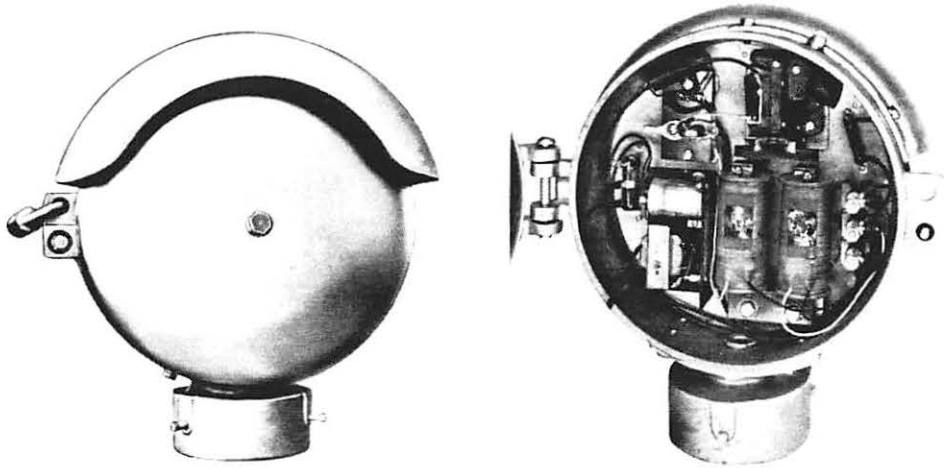


Ref No.	Description	Piece No.
1	Push Nut	970-45
2	Rain Shield	1208-CA
3	Op. Clevis Pin w/Cotter Pin	1209-16
4	Adjustable Resistor Assy	1210-42-1
5	Gong	1211
6	Movement Base	1209-1
7	Hammer Complete w/Reinf. Sps.	1210-17
8	Packing	1217-2
9	Cover, for Top of Pipe/Pole Mt.	1219-2-M
9A	Cover, for Wall/Side of Pole Mt.	1219-3-M
10	Case	1220-2-M
11	Left Hand Dust Guard	1248-11
12	Right Hand Dust Guard	1248-12
13	Gasket	1248-15
14	Packing Ring	1248-16
15	Insulator	1249-16-CA
16	Contact Block	1210-11
17	Coil & Core Assy	1249-30
17A	Coil Only (2 Req'd.)	1231-6A-5
19	Fixed Resistance	1235-4
20	Terminal Strip	2508-69-3
21	Hardware Kit	2508-203
22	Washer	10708
23	Oscillator & Bushing	1209-11

Ref No.	Description	Piece No.
24	Oscillator Stud	1209-8
25	Std. Pipe Plug	1/4
26	Clamp	1953-30
28	Condenser	1101-114
29	Terminal Strip	1101-115
30	Contact Finger Support	1209-14
31	Contact Finger	1222-10
32	Rectifier S/A	1210-46
33	Test Terminal	38-0045-46
34	Test Nut	38-0045-290
35	Armature Assy	1209-2
36	Op. Link Pin w/Cotter Pin	1209-15
37	Armature Pin w/Cotter Pin	1209-17
38	Moving Contact	1210-5
39	Link Insulator	1210-4
40	Link Insulation	1210-10
41	Operating Link	1209-4
42	Hex HD Cap Screw	5/16-18 x 1
43	RD HD Rivet	3/8 x 3 1/2
44	Set Screw, Cad Plt.	5/16-18 x 3/4
45	Socket for 4" I.D. Pipe	1206-4B-CA
45A	Socket for 5" I.D. Pipe	1206-5B-CA
45B	Socket for 6" I.D. Pipe	1206-6B-CA

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632

WESTERN-CULLEN-HAYES
"Model 0666" WARNING BELL



A loud tone warning bell that has been designed and built for heavy-duty industrial applications.

- Operates on 120VAC
- Adaptable—can be signal mast, pipe or wall-mounted
- Adjustable ringing rate (200 strokes per minute average)
- Loud tone—Approx. 90 dbA @ 10 feet
- Extra-long service life product

PERFORMANCE

The Model 0666 Bell features a mechanism design proven thru years of service as a railroad crossing warning bell. Factory tests of this mechanism indicate it will perform over 8,000,000 operations with only one oiling.

SPECIFICATIONS

Conforms to applicable sections of A.A.R. Signal Specification 3.2.60, Highway Crossing Bell. Operating instructions and wiring schematic are included on the inside cover of every bell.

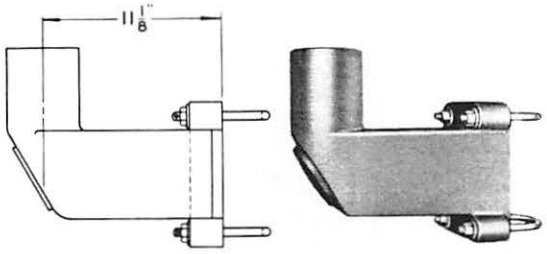
Voltage—105-125 VAC
Audio Output—Approx. 90 dbA @ 10 feet
Power—1.2 Amp max
Dimensions—1'3" H x 1'2" W x 7" D
Weight—Approx. 27 pounds

HOW TO ORDER

Ref. No.	Description	Piece No.
A	Model 0666 Bell, for top of post or pipe mounting	
	For 4" ID pipe, 4½" OD pole	**0666CR**
	For 5" ID pipe, 5⅝" OD pole	**0666FR**
	For 6" ID pipe, 6¾" OD pole	**0666HR**
B	Model 0666 Bell, for wall or side-of-pole mounting	
	For wall mounting only	**0666ARP**
	For wall or side of 4½" OD pole mounting	**0666ARP-4**
	For wall or side of 5⅝" OD pole mounting	**0666ARP-5**
	For wall or side of 6¾" OD pole mounting	**0666ARP-6**

MOUNTING ACCESSORIES
For CR Version

Reference A



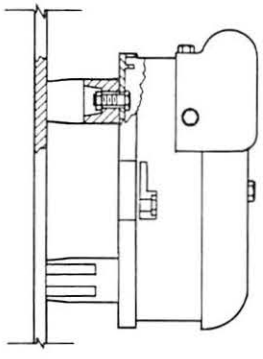
Reference B

Reference C

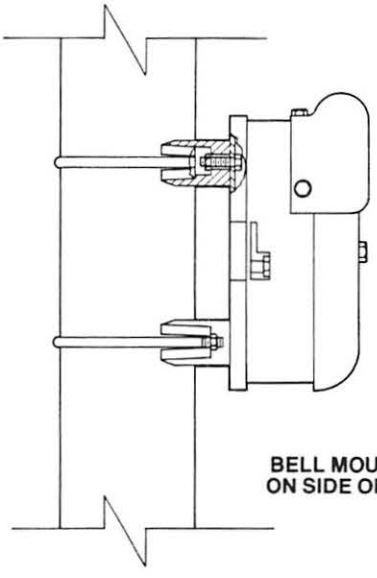
Special accessories are available for the Model 0666CR version (for top of 4" ID pipe mounting) of this bell. They permit the mounting of the bell in a variety of locations.

Ref. No.	Description	Piece No.
A	Gooseneck Bracket for mounting to:	
	3" ID pipe	873-27B
	3½" ID pipe	873-28B
	4" ID pipe	873-29B
	5" ID pipe	873-30B
	6" ID pipe	873-31B
	8" ID pipe	873-32B
B	Reducer 5" to 4" ID pipe	990-63
C	Flat Surface Mounting Adapter	216-2

MOUNTING APPLICATIONS
For ARP Version

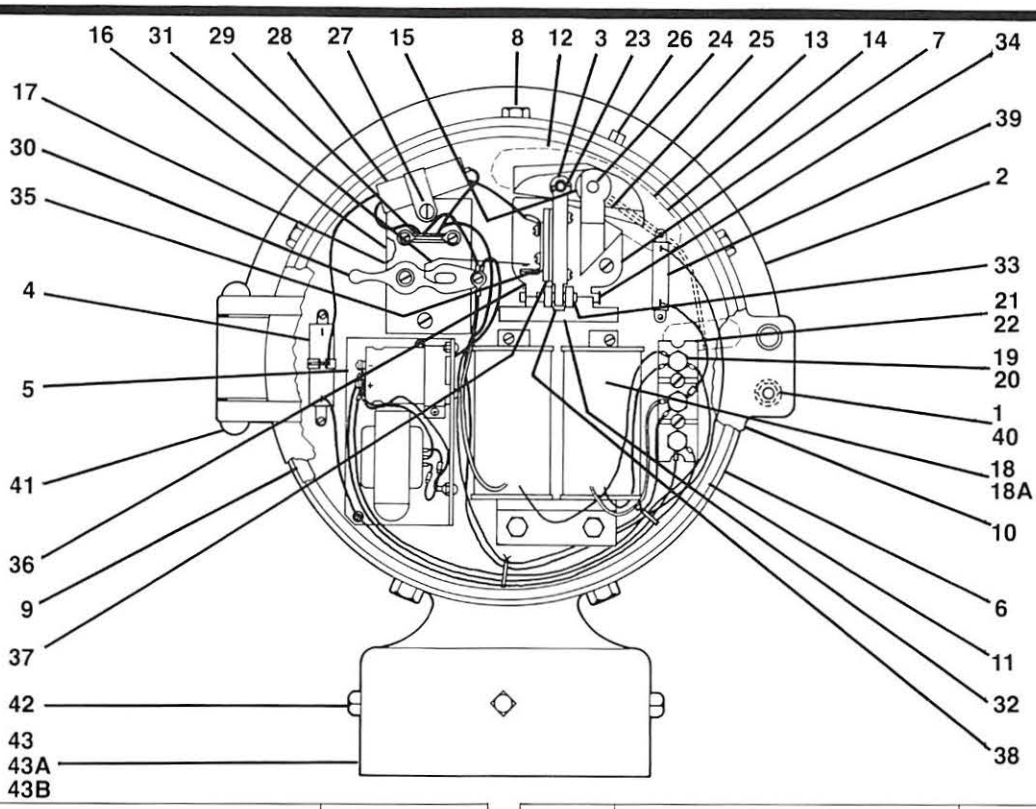


BELL MOUNTED ON WALL



BELL MOUNTED ON SIDE OF PIPE

HIGHWAY CROSSING BELL MODEL "0666" CR, FR, HR
REPLACEMENT PARTS

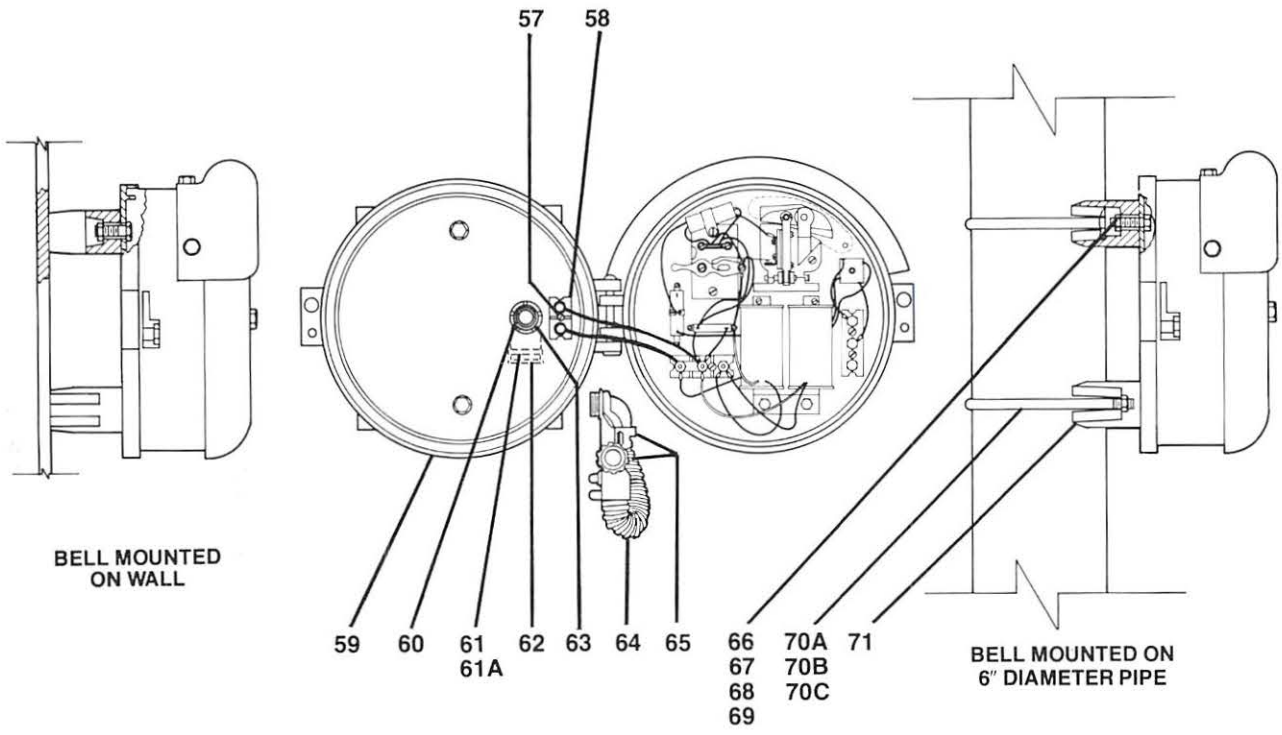


Ref. No.	Description	Piece No.
1	Push Nut	970-45
2	Rain Shield	1208-CA
3	Op. Clevis Pin w/Cotter Pin	1209-16
4	Adjustable Resistor Assy	1210-12
5	Transformer Rectifier Assy	1210-14
6	Gong	1211
7	Movement Base	1209-1
8	Hammer Comp. w/Reinf. Sp.	1210-17
9	Packing	1217-2
10	Cover, for Top of Pipe/Pole Mt.	1219-2-M
11	Case	1220-3
12	Left Hand Dust Guard	1248-11
13	Right Hand Dust Guard	1248-12
14	Gasket	1248-15
15	Packing Ring	1248-16
16	Insulator	1249-16-A
17	Contact Block	1210-11
18	Coil & Core Assy	1249-30
18A	Coil Only (2 Req'd.)	1231-6A-5
19	Insulating Cap	R-2000-1
20	Insulating Sleeve	R-2000-2-B
21	Terminal Strip	2508-69-3
22	Hardware Kit	2508-203

Ref. No.	Description	Piece No.
23	Washer	10708
24	Oscillator & Bushing	1209-11
25	Oscillator Stud Cotter Pin	1209-8
26	Std. Pipe Plug	¼
27	Clamp	1953-30
28	Condenser	1101-114
29	Terminal Strip	1101-115
30	Contact Finger Support	1209-14
31	Contact Finger	1209-10
32	Armature Assy	1209-2
33	Op. Link Pin w/Cotter Pin	1209-15
34	Armature Pin w/Cotter Pin	1209-17
35	Moving Contact	1210-5
36	Link Insulator	1210-4
37	Link Insulation	1210-10
38	Operating Link	1209-4
39	Fixed Resistance	1235-4
40	Hex Head Cap Screw	5/16-18 x 1"
41	Round Head Rivet	3/8" x 3½"
42	Set Screw, Cad. Plt.	5/16-18 x ¾"
43	Socket for 4" ID Pipe	1206-4B-CA
43A	Socket for 5" ID Pipe	1206-5B-CA
43B	Socket for 6" ID Pipe	1206-6B-CA

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632

MODEL "0666" ARP WARNING BELL
ADDITIONAL PARTS FOR WALL OR POLE SIDE MOUNT



ADDITIONAL PARTS

ORDERING REFERENCES

Ref. No.	Description	Piece No.
57	1/4"-20 Slotted Screw, Fil. Hd. x 3/4" Lg. Cad. Plt.	
58	Terminal Block Assy	
59	Cover for Wall or Post Mount	1219-3M
60	Elbow Wire Outlet	
61	3/4" Street el	
61A	3/4" Pipe Nipple	
62	3/4" Chase Nipple	
63	3/4" Conduit Bushing	
64	3/4" Penflex Conduit x 18" Lg.	
65	3/4" 90° Squeeze Connector	
66	5/8"-11 Hex Hd. Bolt x 1 1/2" Lg. Cad. Plt.	
67	5/8"-11 Nut. Hex Hd. Cad. Plt.	
68	5/8" Flat Washer Cad. Plt.	
69	5/8" Lock Washer Cad. Plt.	
70A	U-Bolt 4" Pipe	3364-2-2X
70B	U-Bolt 5" Pipe	3364-5-5X
70C	U-Bolt 6" Pipe	3364-34-34X
71	Adapter Clamp	3364A1-1-1A

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632

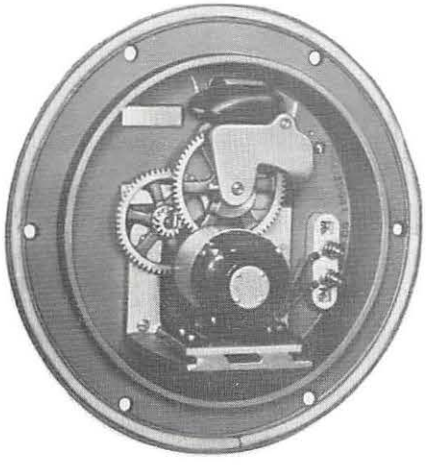
Type 555 Motor Driven Bell

For 6 to 600 Volts D.C. or 115 or 230 Volts A.C., 25 or 60 cycles

CAST ALUMINUM HOUSING

12" STEEL GONG

Approximately 112 Strokes Per Minute



The Type 555 Gong Type Crossing Bell is of the same general appearance as the Type 222 Bell except that the hinged cover is enlarged to house the motor driven mechanism, consisting of a motor, two gears and a bell hammer. A cam mounted on one of the gear wheels engages and raises a weight to a certain point and then, due to gravity, allows it to drop. The bell hammer is connected to this operating weight by a shaft which causes the hammer to strike the gong a sharp heavy blow when the weight drops, giving a clear penetrating sound. The hammer blows are so timed that the sound waves of one blow are not broken up by subsequent waves.

This bell can be furnished for operation on any specified direct current voltage from 6 to 600; or for use on alternating current commercial lighting circuits of 115 or 230 volts, either 25 or 60 cycle, as specified.

Special versions of this bell have been developed for use on Diesel locomotives and on "Push-Pull" suburban passenger cars.

Ref. No.	Description	Piece No.
A	Type 555 Bell for mounting on top of 3½" I.D. pipe post. Specify D.C. voltage or A.C. voltage and frequency	0555B
A1	Same as Ref. A but for mounting on 4" I.D. pipe post	0555C
A2	Same as Ref. A but for mounting on 3" I.D. pipe post	0555D
A3	Same as Ref. A but for mounting on 5" I.D. pipe post	0555F
A4	Same as Ref. A but for mounting on 6" I.D. pipe post	0555H

Type 555C Bell can be mounted on the side of pole or flat surface by use of the Gooseneck Bracket, PN: 873

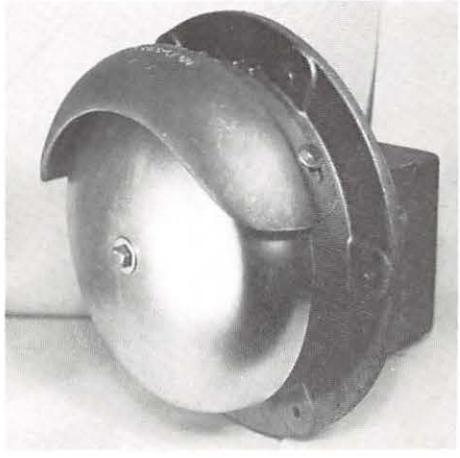
WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632

TYPE 555ACN MOTOR DRIVEN BELL

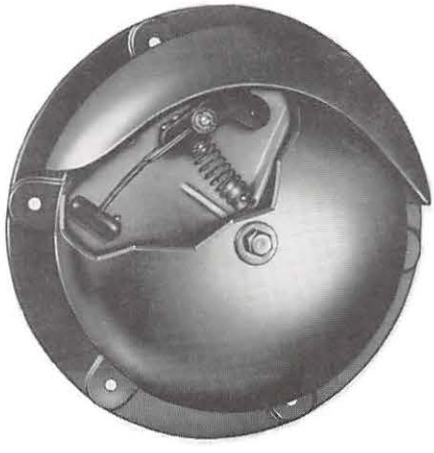
FOR DIESEL LOCOMOTIVES AND PUSH-PULL PASSENGER CARS

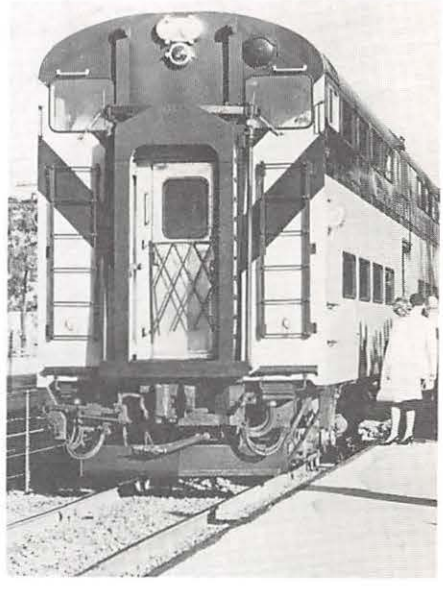
74-Volts D.C. or 115-Volts, 60-Hz

- 112 STROKES PER MINUTE
- TWELVE INCH BELL STEEL GONG



- CAST ALUMINUM HOUSING
- WITH EXTERIOR LUBRICATION POINTS





The Type 555ACN motor driven bell has an operating mechanism which consists of a motor, two gears and a bell hammer. Each hammer blow is distinct—so timed that the sound waves of the blow are not broken up by those of subsequent blows.

Operation. A cam, which is mounted on one of the gear wheels, engages and raises a weight to a certain point and then allows it to drop; this causes the bell hammer, which is connected to the operating weight by a shaft, to strike the gong, giving it a clear and penetrating sound.

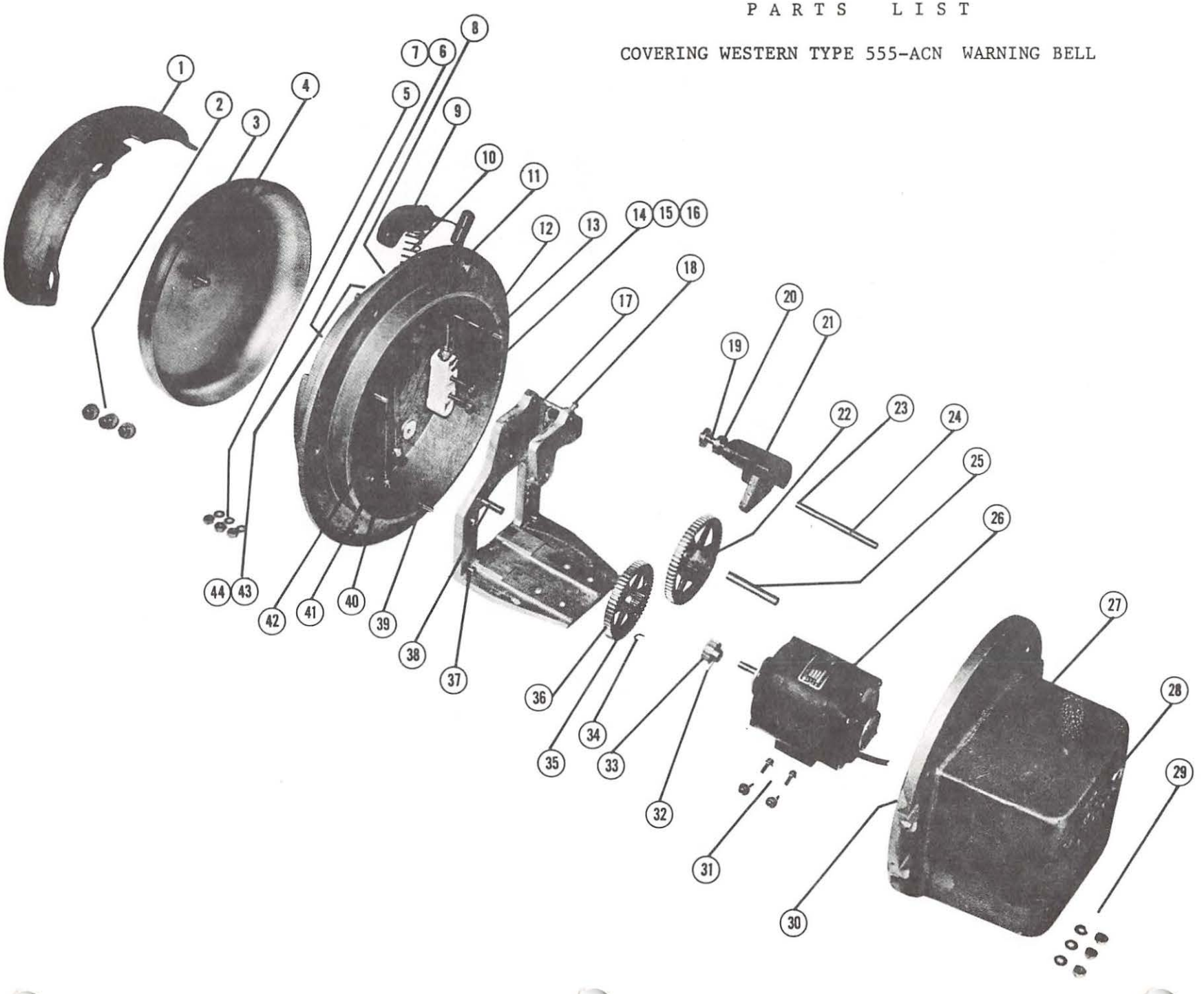
WC Hayes

WESTERN-CULLEN-HAYES, Inc.

2700 West 36th Place • Chicago, Illinois 60632 •
Telephone: 312/254-9600 • Telex 25-3206

P A R T S L I S T

COVERING WESTERN TYPE 555-ACN WARNING BELL



PARTS LIST
COVERING WESTERN TYPE 555-ACN WARNING BELL

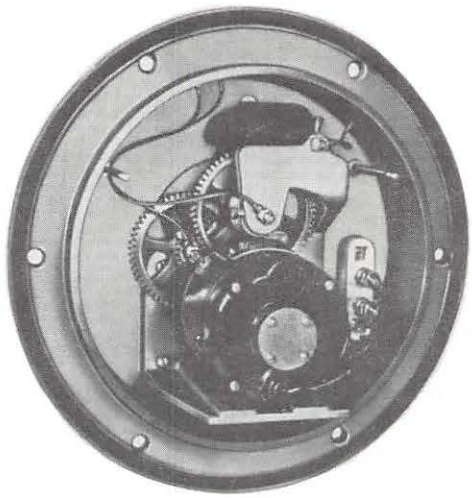
FIGURE NUMBER	DESCRIPTION	QTY./ CAR	PART and DRAWING #	FIGURE NUMBER	DESCRIPTION	QTY./ CAR	PART and DRAWING #
1	Rainshield	1	1208 -CA	22	Drive Gear	1	1410-21
2	5/16-18x5/8 Lg. Hex. Hd. Cap Screw W. Lock Washer	3		23	1/16"x1/2" Lg. Cotter Pin (not exposed)	1	
3	Gong	1	1211	24	Operating Weight Pin	1	1508-46
4	1/2-13x7/8 Lg. Hex. Hd. Cap Screw W. Lock Washer	1		25	Drive Gear Shaft	1	1410-22
5 & 29	1/4-20 Hex Nut W. Lock Washer	12*		26	Motor Sub Ass'y. (Specify 74 or 115 V.)	1	0700-219S
6	Spring Rocker (not exposed)	1	1508-6	27	Cover	1	1507-EM
7	#10-32 x 1½" Lg. Rd. Hd. Machine Screw (not exposed)	1		28	1/2" Chase Nipple, Straight	1	
8	Case	1	1506-EM	30	Felt-Packing (Cemented in Cover) (not exposed)	2	1217-2
9	Hammer & Hammer Support	1	1508-20	31	10-32x3/4 Lg. Rd. Hd. Machine Screw/ Plain & Lock Washer	4	
10	Hammer Spring	1	1508-7	32	3/32 Dia. x 5/8" Lg. Pin	1	
11	Gasket - 3/8" Dia. Neoprene Cord	1		33	Pinion	1	1410-15B
12 & 37	1/4-20x7/8" Lg. Fil. Hd. Machine Screw	5		34	Snap Ring	1	254229
13	A.A.R. Terminal Block	1	1056-18 E	35	3/8" I.D.x1-1/16" O.D.x1/32 Th. Washer (not exposed)	1	1410-32
14	A.A.R. Binding Nut	4	10706	36	Intermediate Gear & Pinion	1	1410-16
15	A.A.R. Clamp Nut	4	10707	38	Intermediate Gear Stud	1	1508-141
16	A.A.R. Washer	8	10708	39	Stud	3	1508-35
17	Gear Frame	1	1411-3CA	40	L-Fitting With 10-32 Thread	1	15002-1
18	10-32x1/2 Lg. Socket Set Screw (Nyloc)	2		41	Hose Fitting W. #10-32 Thread	6	1508-47
19	Operating Weight Stud	1	1508-4	42	Vinyl Tubing (Length as Req'd.)	3	3814-4
20	Spacer - 5/16" I.D. Plain Washer	5		43	Oil Hole Cover (not exposed)	3	1508-44
21	Operating Weight	1	1508-45	44	Neoprene Gasket (not exposed)	9	11761

* Six ¼"-20 Hex Nuts w Lock Washers are not shown in above call outs

Rev. 2-15-82

INSTALLATION APPLICATIONS ON THE
W-C MOTOR DRIVEN BELL

- Types 555ACN-115 and 555ACN-74 are both flanged units for mounting on the bulkhead of the car or engine. In such mounting the bell is located on the outside and the mechanism is inside the vehicle.
- Type 555ACN-74C has a cover which encloses the mechanism, allowing it to be mounted on the exterior of the vehicle.
- Type 555ACN-74 and 555ACN-74-C are for operation on 74-V., Diesel engine starting battery.
- Type 555ACN-115 has an A.C. motor for use on 115-V., 60-Hz car lighting circuit.



PERIODIC MAINTENANCE

Three exterior oil vents, located at the top of the bell, are for lubricating bearing surfaces. Each unit has been lubricated at the factory preceding shipment with SAE 20 non-detergent oil. Such procedure should be followed every month. On gear faces use NO. 201 Open Gear Lubricant, Western-Cullen's No. 1509-43.

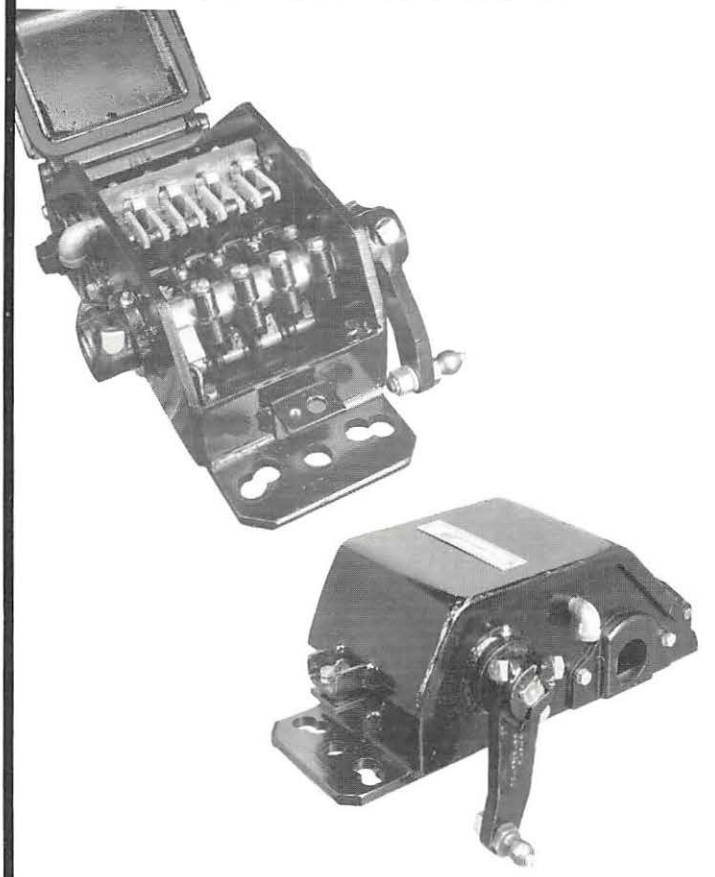
GUARANTEE

Western-Cullen Type 555ACN Motor Driven Locomotive Bells are guaranteed for one year from date of shipment against defects in material and workmanship. In order that this warranty be effective, maintenance of the unit must have been adhered to in compliance with the recommended program of lubrication of the unit. Should the bell appear to be defective, it should be returned to use prepaid for inspection. Please enclose a letter explaining the failure. If found to be defective, repair or replacement will be made at no charge, F.O.B., Chicago. This guarantee does not include damage caused by overloading, misuse or accident.

ORDERING REFERENCE

Description:	Piece No.
Type 555ACN-74C Motor Driven Bell, Fully enclosed, 74-V DC	0555ACN;74C
Type 555ACN Motor Driven Bell, bulk-head mounting, 115-V, 60-Hz	0555ACN-115
Type 555ACN Motor Driven Bell, bulk-head mounting, 74-V, DC	0555ACN-74

MODEL 100 CIRCUIT CONTROLLERS



UNUSUALLY DURABLE

- 3/8 inch plate steel construction tough to break–easy to repair
- 1½" diameter shaft

MANY CONFIGURATIONS

- 2 and 4 cam/contact set units
- 2 and 3 position cams
- With or without return spring
- Two crank arm options
- Non-insulated and insulated ball studs

RELIABLE

- Contacts positively driven in both directions
- Quick response, three degree movement of crank arm actuates contacts

ADAPTABLE

- Six mounting holes, two slotted holes at each end on 4"/5" centers, one at each end on center line of case
- Wide variety of accessories

W-C-H MODEL 100 CIRCUIT CONTROLLERS MEET KEY AAR REQUISITES (Manual Part 12.1.1)

Particular attention has been paid to Association of American Railroads design requirements established for Operating Shafts, Operating Cams, Contacts, Cam/Contact Responsiveness, Cam/Contact Inter-relationships and Unit Dielectric Characteristics.

GENERAL COMMENT

Circuit controllers are used to provide positive electrical indication of the position or condition of switch points, derails, bridges, slide fences, etc. Such indication can modify signal aspects to restrict train movement, actuate crossing signals or turn on alarms of various types. Circuit controllers are capable of controlling relay circuits or shunting track circuits. Usually a heavy (1" dia) steel rod connects the circuit controller to the device being checked. Units can be purchased with internal return springs that will "detect" a broken operating rod by moving the operating shaft so that the cams cause contacts to open, resulting in a restrictive or alarm condition.

Design concepts for the Model 100 Circuit Controller have evolved over time and address the needs of the railroad industry. These needs include durability through a wide range of abusive environmental conditions, reliable performance to precise and exacting standards and a device that presents a very low maintenance burden over an extended service life.

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, IL 60632-1682

MODEL 100 CIRCUIT CONTROLLERS

UNIT SPECIFICATIONS

Physical Characteristics

CASE

1. Drainage Hole: ¼″, plugged
2. Wire Openings: Two holes, 3 sq. in., one each side
3. Mounting Lug Offset: ⅛″, to permit drainage
4. Over-all Height: 7″

COVER

1. Furnished with weather-proof gasket
2. Removable when unlocked and fully opened
3. Secured with railroad signal type lock-bolt. Separate openings on lock tabs permit use of private lock with ⅜″ dia. shackle

VENTILATION

Two hooded ventilators, each ¼ sq. in., one each side

SHAFT

1. Diameter: 1¼″ steel
2. Bearings: 1″ long, I.D., 0.003″ larger than O.D. of shaft, with annular grease grooves
3. Operating crank and/or shield can be mounted to either end
4. Shaft has hobbed threads to permit micrometer adjustment of cams.

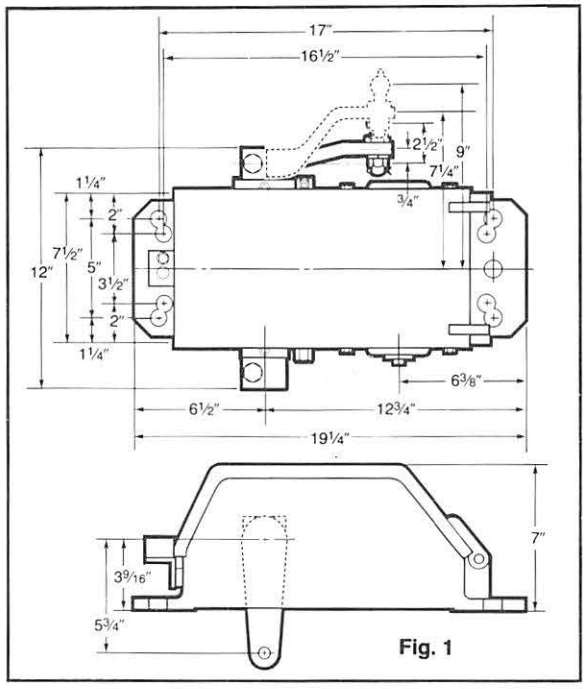


Fig. 1

TERMINAL BOARD AND TERMINALS

1. Terminal board of linen-based bakelite for strength and durability. ¾″ thick
2. Terminals retained in terminal board to prevent turning, on 1⁷⁄₁₆″ horizontal centers, 1⅛″ vertical centers
3. Temperature range −40° F to +185°F

Electrical Characteristics

1. Contact Rating: 15A, continuous
2. Dielectric Capacity: 3000 VAC between all parts of electrical circuits and other parts insulated therefrom, for one minute
3. Surface Leakage: Not less than ¼″ between any exposed current carrying part and any other metallic part

CONTACTS

1. Gap: Not less than ⁱ⁄₁₆″ when opposite contact just closes
2. Travel: Not less than ¼″
3. Wipe: Not less than ¹⁄₃₂″
4. Pressure: In closed position, not less than 3 lbs., 8 oz.

CAMS

1. Separately adjustable with micrometer adjusting screws. Independent lock screws provided to secure cams in proper position.
2. Cams force and mechanically retain contacts in all positions
3. Throw–Maximum 9″ without return spring option. Will accommodate normal track switch (3½″–5½″) and derail (EB-5½″, HB, HBP-6¼″) throw with return spring
4. Two position cams can be used as three position cams by using two cam/contact spaces for each three position circuit

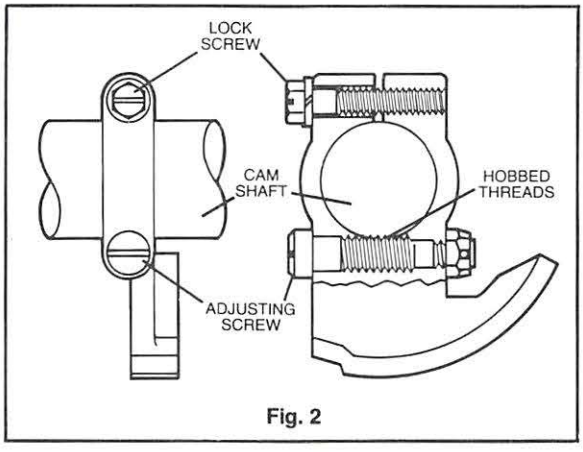


Fig. 2

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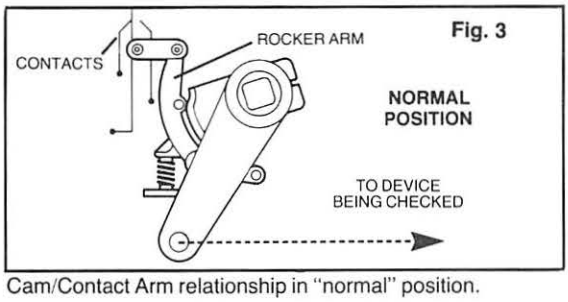
MODEL 100 CIRCUIT CONTROLLER

THEORY OF OPERATION

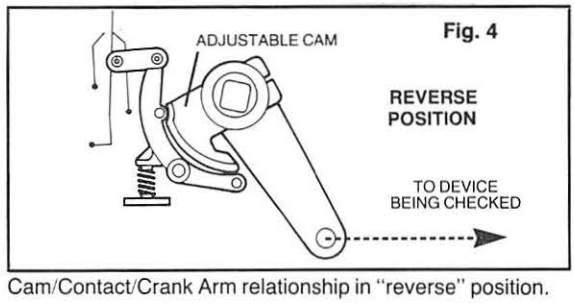
Model 100 Circuit Controllers are used to make or break electrical circuits, in response to the movement of derails, switch points, etc. A heavy (1" dia.) operating rod connects the Circuit Controller Crank to the device being checked for movement. In the "on", "closed", etc. position the device is considered to be in the "normal" position. (See Figure 3, below.) When the device comes "off", "opens", etc., the Crank Arm rotates, positioning cams and contacts in the "reverse" position. (See Figure 4, below.) Note that the "normal" and "reverse" positions depicted in Figures 3 and 4 are themselves reversed when the circuit controller is used with the Model EB Hinge Derail.



Cam/Contact Arm relationship in "normal" position.

Because the W-C-H Model 100 Circuit Controller, is twice reversible (box can be turned end-for-end and Crank Arm can be mounted on either side), "normal" and "reverse" positions for the cam/contact sets are determined by the position they take when the Circuit Controller is installed and connected to the device being checked. The usual installation orientation for the Model 100 Circuit Controller is with the cover hinges toward the field (away from the track). All installation and circuit diagrams in this brochure are shown assuming such installation orientation.

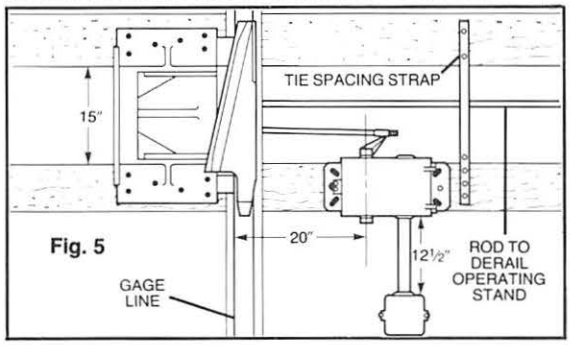
Note that with such installation orientation the "normal" and "reverse" contact closures for the Model EB Hinge Derail will be reversed.



Cam/Contact/Crank Arm relationship in "reverse" position.

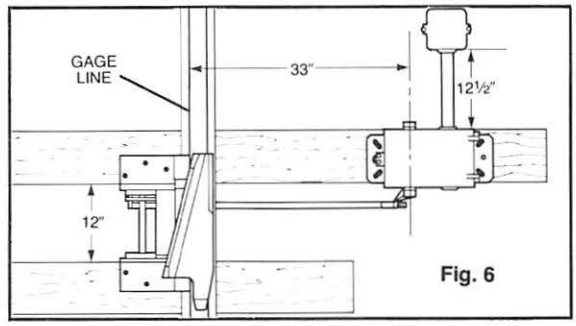
DERAIL APPLICATIONS

Derails are safety devices used to protect people and equipment from injury or damage. The need to have a reliable means to detect the position of the derail is obvious. W-C-H Model 100 Circuit Controllers are used for this purpose. Whether the method employed to move the derail is manual, manual (but electrically locked), or electrically powered, safety is enhanced with the use of a Circuit Controller.



Model 100 Circuit Controller installed with model HB/HBP Sliding Derail. Suggest using circuit controller Piece No. 38-0100-99, or 38-0100-105 (see page 16-6), and operating rod Piece No. 38-0100-201 (see page 16-7). Use terminal housing 1182-22 in this application.

Once you have determined which derail is appropriate for your particular application (if in doubt consult W-C-H personnel), the remaining considerations take care of themselves. Figures No. 5 and 6, below, depict typical installations for manually operated derails. Consult factory or appropriate catalog section if Circuit Controller is being used with ELDO or DeLectric Derail Operators. Circuiting can be by either method shown on Page No. 16-5 or a variation thereof. Note that with Model EB Hinge Derail, the "normal" and "reverse" contact closures depicted will be reversed.



Model 100 Circuit Controller installed with model EB Hinge Derail. Suggest using circuit controller Piece No. 38-0100-99, or 38-0100-105 (see page 16-6), and operating rod Piece No. 38-0100-215 (see page 16-7). Use terminal housing 1182-22 in this application.

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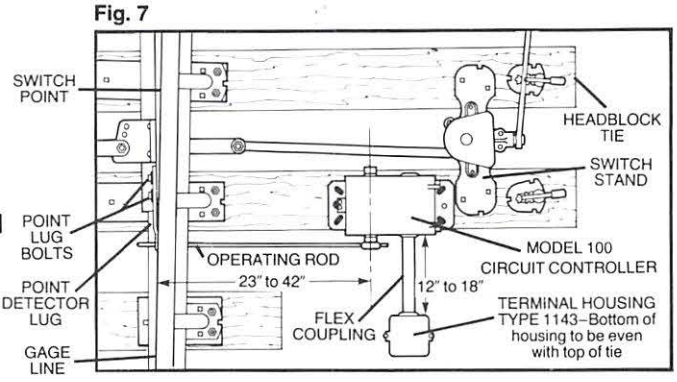
MODEL 100 CIRCUIT CONTROLLERS

TRACK SWITCH APPLICATIONS

In areas where train movements are controlled for safety or productivity purposes, reliable indication of track switch position is essential and requires the use of a circuit controller. A typical installation, with key components identified, is depicted at right in Figure No. 7.

Fig. 7



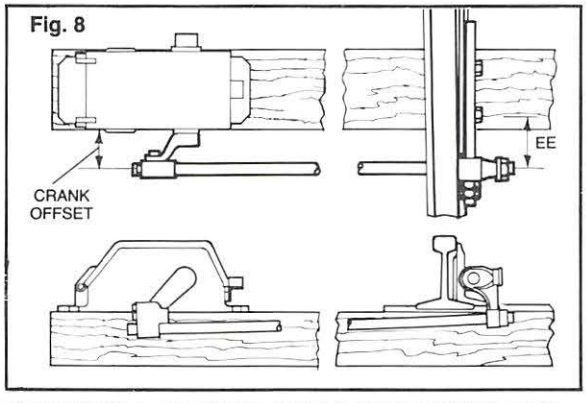
APPLICATION CONSIDERATIONS

Using a Model 100 Circuit Controller with a track switch requires that the design engineer take several factors into consideration.

1. Cam Position Types–References are made to "two position" and "three position" cam configurations. Two-position cam applications result in circuiting that indicates when the switch points are at their full "normal" and/or full "reverse" locations. Three-position cam applications permit an additional indication, that of the switch points being "in transition" between full "normal" and full "reverse". Usually, circuit controllers are purchased to match the cam configuration desired. However, a Model 100 Circuit Controller with two-position cams may also be used for three-position applications by using two cam/contact sets for each circuit and making the necessary cam adjustments. Because circuits using two-position cams are most common, they are depicted in this brochure.

2. Use of the Return Spring–Purpose of the return spring is to force open the contacts to permit a restrictive train signal indication should the Operating Rod become broken or disconnected.

Fig. 8



Model 100 Circuit Controller connected to near switch point. To determine crank offset, first select proper Point Detector Lug. Consider Dimension "EE" when selecting lug.

This option is available on Model 100 Circuit Controllers.

3. Crank Offset–Two offsets are offered. Consider tie location and Dimension "EE" of Point Detector Lug (See below and Pages 16-2, 16-8) to determine proper crank offset. Alignment of the operating rod between the point detector lug and the Model 100 Circuit Controller should be as close to perpendicular as possible.

4. Ball Stud–Insulated and non-insulated ball stud options are available. In locations where the operating rod linkage to the Model 100 Circuit Controller could cause problems with track signal circuits or electric propulsion power, an insulated ball stud should be used.

5. Operating Rod–When selecting the operating rod, keep in mind that the point detector lug should be installed on the normally closed switch point (See Fig. 7, 8 and 9). The intended installation location of the Model 100 Circuit Controller is the other primary consideration. Select the appropriate "near" or "far-point" type operating rod of the desired length (See Page 16-7).

6. Point Detector Lug–As with the crank offset, tie location determines which point detector lug you should use (See Fig. 8, Fig. 9 and Page 16-8). Alignment of the operating rod between the point detector lug and the Model 100 Circuit Controller should be as close to perpendicular as possible. Also determine proper bolt size to match mounting holes in the switch point.

7. Terminal Housings–Terminal housings are used to terminate signal circuit wiring between the Model 100 Circuit Controller and the signal control case. Doing so helps to prevent damage to expensive control apparatus and makes repairs to underground wiring easier. It is recommended that the Type 1143 Terminal Housing be used for this purpose. (See Page 16-8 for details).

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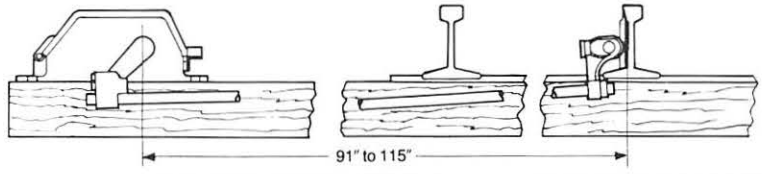
MODEL 100 CIRCUIT CONTROLLERS

TRACK SWITCH APPLICATIONS (Cont'd)

Fig. 9



Model 100 Circuit Controller connected to far switch point. See Fig. 8 comment on crank offset and point detector lug selection.

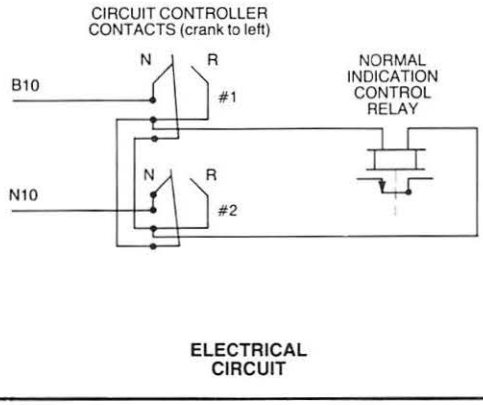
CIRCUITING FOR ALL APPLICATIONS

Below are shown two typical circuits with proper Circuit Controller Terminal Board hook-ups. These circuits employ "two-position" type Cams and assume that the "normal" location is with the Crank to the left. Installation orientation of the Model 100 Circuit Controller is assumed to be with the cover hinges toward the field (away from the track). Circuits and hook-ups shown will vary if installation varies from these conditions.

Note: Due to the operating characteristics of the Model EB Hinge Derail, the circuiting depicted here should be reversed when such a derail is used with the Circuit Controller.

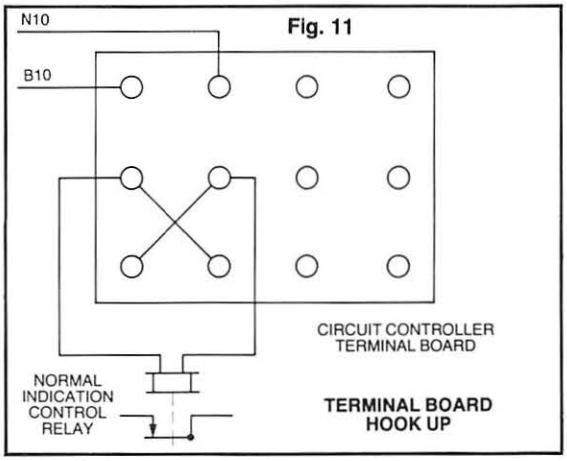
CIRCUIT WITH NORMAL POSITION INDICATION

Fig. 10



ELECTRICAL CIRCUIT

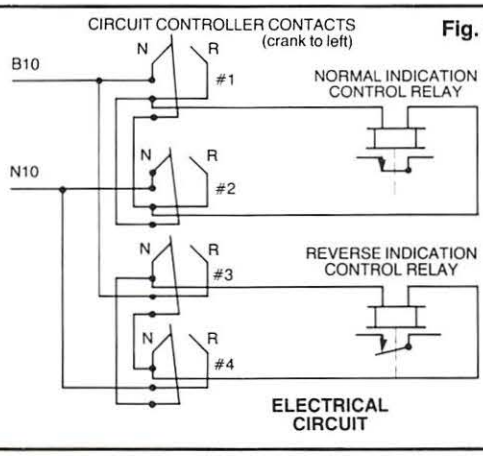
Fig. 11



TERMINAL BOARD HOOK UP

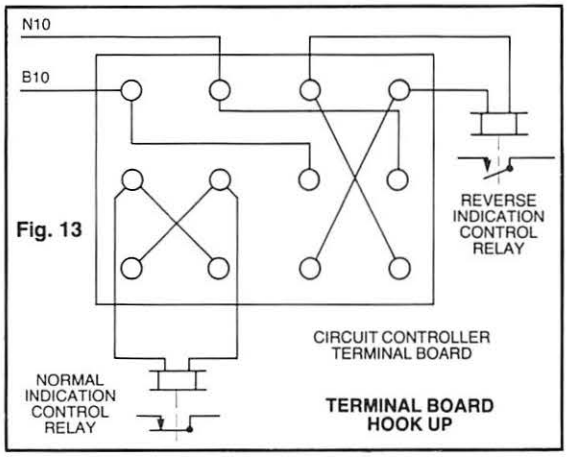
CIRCUIT WITH NORMAL AND REVERSE POSITION INDICATIONS

Fig. 12



ELECTRICAL CIRCUIT

Fig. 13



TERMINAL BOARD HOOK UP

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MODEL 100 CIRCUIT CONTROLLERS

MODEL 100 CIRCUIT CONTROLLER

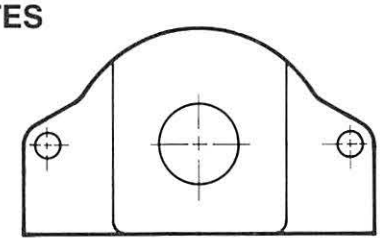
ORDERING REFERENCES

Cam Configuration	Return Spring	Crank Offset				Piece No.
		¾" Offset		2 3/32" Offset		
		Insulated Ball Stud	Non-Ins. Ball Stud	Insulated Ball Stud	Non-Ins. Ball Stud	
2-2 Pos	No		Yes			38-0100-98
2-2 Pos	No				Yes	38-0100-99
4-2 Pos	No		Yes			38-0100-100
4-2 Pos	Yes		Yes			38-0100-101
4-2 Pos	No				Yes	38-0100-105
4-2 Pos	Yes				Yes	38-0100-106
4-2 Pos	No	Yes				38-0100-110
4-2 Pos	Yes	Yes				38-0100-111
4-2 Pos	No			Yes		38-0100-115
4-2 Pos	Yes			Yes		38-0100-116
2-2/2-3 Pos	No		Yes			38-0100-120
2-2/2-3 Pos	Yes		Yes			38-0100-121
2-2/2-3 Pos	No				Yes	38-0100-125
2-2/2-3 Pos	Yes				Yes	38-0100-126
2-2/2-3 Pos	No	Yes				38-0100-130
2-2/2-3 Pos	Yes	Yes				38-0100-131
2-2/2-3 Pos	No			Yes		38-0100-135
2-2/2-3 Pos	Yes			Yes		38-0100-136

Model 100 Circuit Controllers are furnished complete as described above with one wiring access Cover Plate drilled for 1½" squeeze connector (Cover Plate PN: 1705-1A) and one drilled and tapped 1¼"–NPT (Cover Plate PN: 1705-1E) and capped with pipe plug.

COVER PLATES

REF. 1



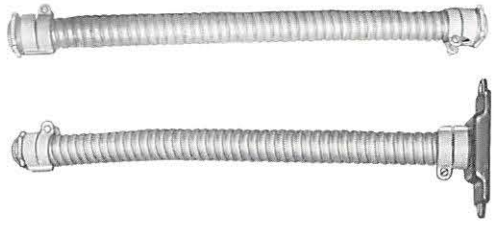
ORDERING REFERENCES

Ref.	Description	Piece No.
1	Cover Plate w/hole for 1½" squeeze connector	1705-1A
1A	Above, but w/2" NPT hole	1705-1B
1B	Above, but no hole	1705-1D
1C	Above, but 1¼"–NPT hole	1705-1E
1D	Above, but w/45° squeeze connector for 1½" flex coupling	38-0100-175

FLEX COUPLING W/WO COVER PLATES

REF. 2

REF. 3



ORDERING REFERENCES

Ref.	Description	Piece No.
2	Flex Coupling, 1½" Dia. x 18" lg. w/two squeeze connectors	1703-2
3	Flex Coupling, 1½" Dia. x 18" lg. w/one squeeze connector and Cover Plate	1705-12
3A	Above, but 2" OD x 19½" lg. Rubber Hose	1182-24U

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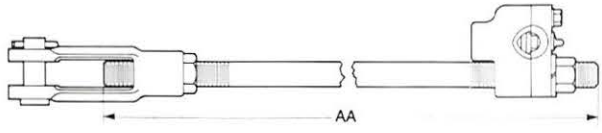
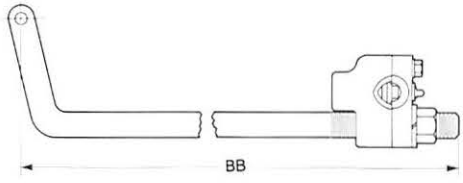
MODEL 100
CIRCUIT CONTROLLER ACCESSORIES

OPERATING ROD ASSEMBLIES FOR DERAILS



REF. 1

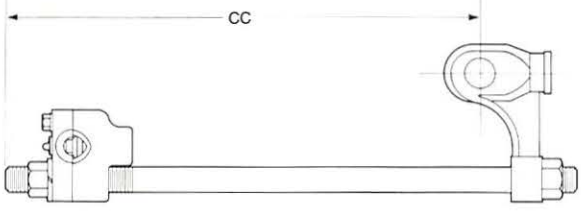


REF. 2

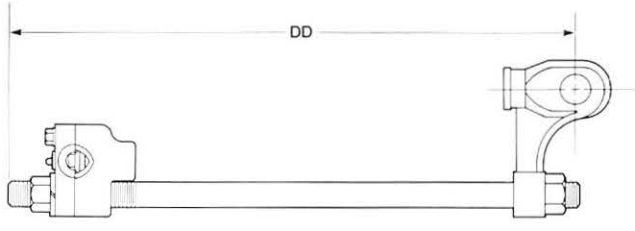
ORDERING REFERENCES

Ref.	Description	Piece No.
1	Operating Rod Assembly for use with Sliding Derail (W-C-H Model HB Series) when Derail is located on near rail (dimension AA-40″)	**38-0100-201**
1A	Above, but for use with Derail on far rail (Eldo & Delectric operator applications) (dimension AA-58″)	**38-0100-200**
2	Operating Rod Assembly for use with Hinge Derail (W-C-H Model EB Series) (dimension BB-42½″) Note: Special Operating Rod Assemblies available on request	**38-0100-215**

OPERATING ROD ASSEMBLIES FOR SWITCH POINTS



REF. 3



REF. 4

ORDERING REFERENCES

Ref.	Description	Piece No.
3	Operating Rod Assembly for use with near switch point (dimension CC-27¼″)	**38-0100-220**
3A	Above, but dimension CC-33½″	**38-0100-221**
3B	Above, but dimension CC-46½″	**38-0100-222**
4	Operating Rod Assembly for use with far switch point (dimension DD-95½″)	**38-0100-230**
4A	Above, but dimension DD-119½″	**38-0100-231**

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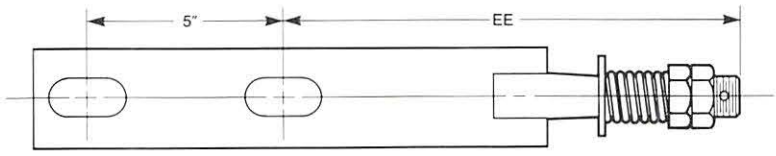
MODEL 100
CIRCUIT CONTROLLER ACCESSORIES

POINT DETECTOR LUGS



REF. 1, 2

ORDERING REFERENCES

Ref.	Description	Piece No.
1	Point Detector Lug Assembly Dimension EE-6¾" for ¾" bolts	38-0100-320
1A	Above, but dimension EE-8⅞"	38-0100-321
1B	Above, but dimension EE-11⅝"	38-0100-322
2	Point Detector Lug Assembly Dimension EE-6¾" for 1" bolts	38-0100-323
2A	Above, but dimension EE-8⅞"	38-0100-324
2B	Above, but dimension EE-11⅝"	38-0100-325
3	Washer Plate for ¾" bolts (not shown)	38-0100-350
3A	Above, but for 1" bolts (not shown)	38-0100-351
4	Set of 2 ¾" thin-head mounting bolts, nuts, washers (not shown)	38-0100-360
4A	Above, but 1" (not shown)	38-0100-361

TERMINAL HOUSINGS

REF. 5

REF. 6

ORDERING REFERENCES

Ref.	Description	Piece No.
5	Type 1182 Terminal Housing, complete with 2" OD rubber hose coupling and seven two-post terminals	1182-22
6	Type 1143 Terminal Housing, complete with 1½" dia. flex metal coupling and twelve single post terminals	1143-1

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Specification Guide for ordering Hayes Derails

(Sliding: HB Series - Hinge: EB Series - Portable Model)

The correct derail size is determined by the vertical distance in even inches from the top of the rail to the surface on which the derail is secured. If tie plates are used add the thickness of the plate under the rail to the height of the rail to determine the correct derail size. Adjustments to make the vertical distance correspond in even inches to the derail size should be made by adzing the ties either under the derail or under the rail. Any Hayes Derail may be used on rail 1/2" lower to 1/2" higher than the rail to which its size number refers, but the distance from the top of the rail to the surface on which the derail is secured must be even inches and must correspond to the size number of the derail.

For these sections, order Size 4

Type	Weight	Height
ASCE	60 lb.	4-1/4"
ASCE	65 lb.	4-7/16"
A R A - A	60 lb.	4-1/2"

For these sections, order Size 5

Type	Weight	Height
ASCE	70 lb.	4-5/8"
C & NW	72 lb.	4-3/4"
A R A - A	70 lb.	4-3/4"
Mo Pac	75 lb.	4-3/4"
ASCE	75 lb.	4-13/16"
U Pac	75 lb.	4-15/16"
A R A - B	80 lb.	4-15/16"
ASCE	80 lb.	5"
Interb'gh	90 lb.	5"
A R A - A	80 lb.	5-1/8"
Can Pac	85 lb.	5-1/8"
C B & Q	85 lb.	5-3/16"
ASCE	85 lb.	5-3/16"
Mo Pac	85 lb.	5-7/32"
D & R G	85 lb.	5-1/4"
A R A - B	90 lb.	5-17/64"
Soo Line	85 lb.	5-3/8"
Grt Nor.	90 lb.	5-3/8"
ASCE	90 lb.	5-3/8"
D L & W	101 lb.	5-7/16"
D & R G	90 lb.	5-1/2"
Dudley	90 lb.	5-1/2"
Pa	100 lb.	5-1/2"

For these sections, order Size 6

Type	Weight	Height
D & R G	90 lb.	5-1/2"
Dudley	90 lb.	5-1/2"
Pa	100 lb.	5-1/2"
C & N W	90 lb.	5-17/32"
A R A - A	90 lb.	5-5/8"
A T & S Fe	90 lb.	5-5/8"
P & R	100 lb.	5-5/8"
A R A - B	100 lb.	5-41/64"
Pa	100 lb.	5-11/16"
C & N W	100 lb.	5-45/64"
U Pac	90 lb.	5-3/4"
Interb'gh	100 lb.	5-3/4"

(Size 6, contd)

Type	Weight	Height
Grt Nor	100 lb.	5-3/4"
ASCE	100 lb.	5-3/4"
Head Free-R A	90 lb.	5-25/32"
A R A - A	100 lb.	6"
AREA	100 lb.	6"
D L & W	105 lb.	6"
Lehigh Val	110 lb.	6"
Dudley	105 lb.	6"
N Y, N H & H	100 lb.	6"
Head Free - R E	100 lb.	6-1/16"
NY, N H & H	107 lb.	6-1/8"
Head Free R E	100 lb.	6-5/32"
AREA	110 lb.	6-1/4"
Grt Nor.	110 lb.	6-1/2"
Dudley	115 lb.	6-1/2"

For these sections, order Size 7

Type	Weight	Height
Grt Nor.	110 lb.	6-1/2"
Dudley	115 lb.	6-1/2"
AREA	112 lb.	6-5/8"
AREA	115 lb.	6-5/8"
Pa	130 lb.	6-5/8"
Head Free - R E	112 lb.	6-3/4"
T R	112 lb.	6-3/4"
AREA	130 lb.	6-3/4"
Head Free - S.P.	113 lb.	6-13/16"
Head Free - P.S.	130 lb.	6-13/16"
Lehigh Val	136 lb.	7"
AREA	133 lb.	7-1/16"
AREA	131 lb.	7-1/8"
Head Free - R E	131 lb.	7-1/4"
AREA	132 lb.	7-1/8"
Head Free - S P	132 lb.	7-5/16"
T R	129 lb.	7-5/16"
AREA	140 lb.	7-5/16"

For these sections, order Size 8

Type	Weight	Height
Pa	152 lb.	8"
Pa	155 lb.	8"

NOTE: All sizes of any Model of Hayes Derail are sold at the same price

WC Hayes
WESTERN-CULLEN-HAYES, Inc.
120 North 3rd Street • P.O. Box 756 • Richmond, Indiana 47374 • Telephone: 317/962-0526

FOLLOW THESE STEPS WHEN INSTALLING A HAYES DERAIL

1) Be sure that the derail ties are:
   A) Sound and solid, to hold derail firmly in place
   B) At right angles to the rail
   C) Spaced to bear against the vertical under-flanges of Derail.

2) Determine height of rail from table (over) or by measuring.
   A) If tie-plates are used, add their thickness to height of rail. Distance from TOP OF RAIL to TOP OF TIE is the VERTICAL DISTANCE with which you must work.

3) Size of Derail (from nameplate) is in even inches, and is VERTICAL DISTANCE which this derail will exactly fit.

EXAMPLE: You have a Size 6 Derail (from nameplate). VERTICAL DISTANCE (Step 2 above) 6-1/2". (5-3/4" high rail on a 3/4" tieplate). Derail, sitting on ties, will be 1/2" too LOW. You may either: A) Shim up the derail 1/2' with steel shims, or B) Remove the tie-plates from under the rail and adz the ties 1/4" under the Derail. Either method will make the distance from TOP OF RAIL to TOP OF TIE (where the derail sits) the same number of inches as size number of Derail. THIS IS A "MUST".

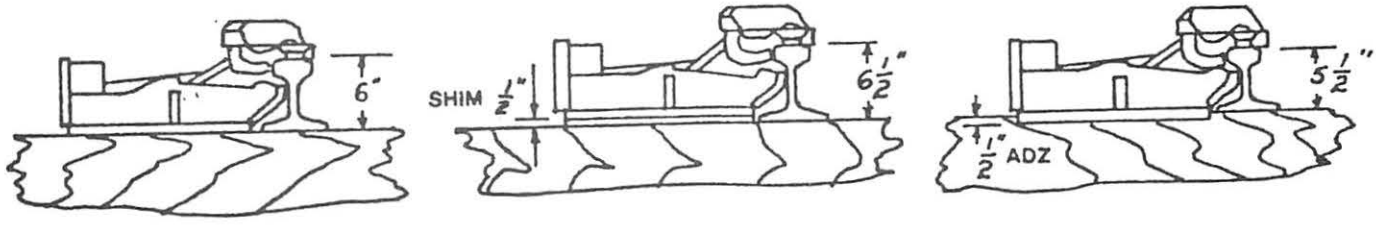
EXAMPLE: You have a Size 6 Derail (from nameplate). VERTICAL DISTANCE (Step 2 above) is 5-1/2". (5-1/2" high rail directly on ties -- no tie-plates). Derail, sitting on ties, will be 1/2" too HIGH. You may either: A) Shim up the running rail 1/2" with steel shim, or B) Adz the ties 1/2" under the Derail. Either method will make the distance from TOP OF RAIL to TOP OF TIE (where the Derail sits) same number of inches as size number of Derail. THIS IS A "MUST".

4) Set Derail in place with under-flanges tight between spaced ties.
   A) If Sliding Type (HB Series) have derailing block in retracted position and SHOVE DERAIL TIGHTLY AGAINST WEB OF RAIL.
   B) If Hinge Type (EB Series) have derailing block in on-track position (ready to derail) and position derail so that DERAILING BLOCK COMES COMPLETELY DOWN ON RAIL-HEAD - AND VERTICAL SURFACE UNDER BLOCK JUST TOUCHES GAUGE EDGE OF RUNNING RAIL.

5) Use all holes and secure Derail to ties with spikes or lag screws.

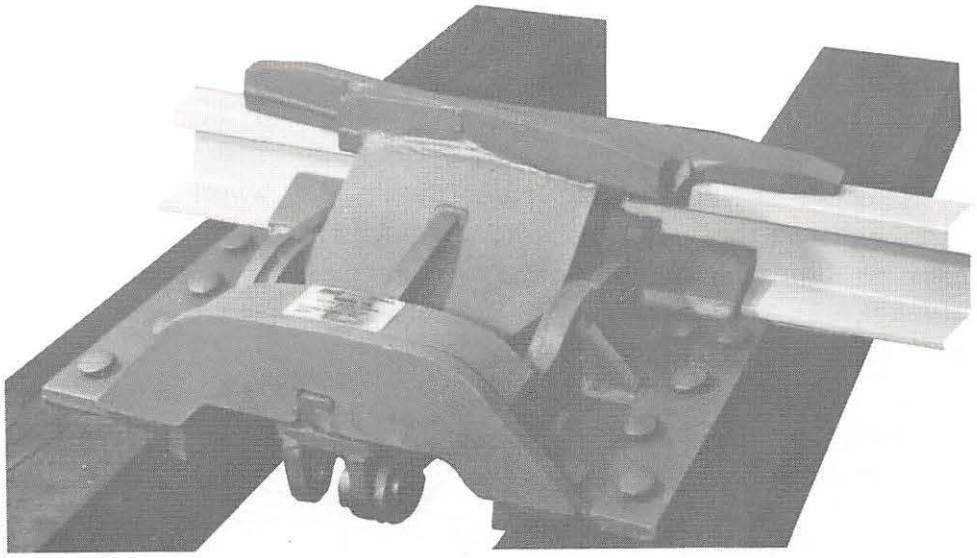
6) Tamp ties thoroughly. Get a good bearing under the running rail.

7) Operate Derail a number of times to be sure it moves on and off rail smoothly, covers ball of rail, and lies flat on top of rail all along under derailing surface. Derail is now ready for use.



(Above) Model HB Size 6 Hayes Derail on various rail heights.

MODEL HB & HBP SLIDING DERAILS



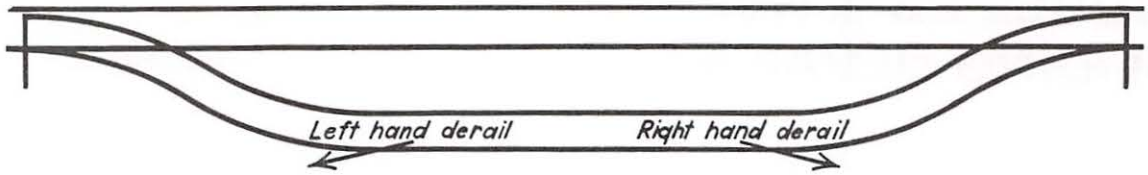
Model	Sizes	Made	Lugs	Weight
HB	4, 5, 6, 7, 8	in right and in left	2 for usual use	266 lbs.
HBP	4, 5, 6, 7, 8	in right and in left	3 for interlocking	277 lbs.

With diesels and other heavy equipment the utmost is needed in protection of the main track. Derails made for the needs of a past generation are inadequate today.

The Model HB Derails are 15% longer, 90% heavier, 20% easier to operate and in derailing put only half as much stress on the derail and on the wheels as any previous Hayes Derail.

Ordering: Specify the model, size and right or left. All sizes of any model and either right or left are sold at the same price.

Size: The size number of a Hayes Derail is the vertical distance in even inches below the top of the rail to the surface on which the derail guide box must be secured. Any Hayes Derail may be used on rail higher or lower than the size number of the derail. But in every case the surface on which the guide box is secured must be exactly the even inches of the derail size number below the top of the rail. With a size 6 derail the surface under the guide box must be exactly 6 inches below the top of the rail; and so with sizes 4, 5, 7 and 8. The derails will operate perfectly if installed as above or as fully detailed in the installation circular.



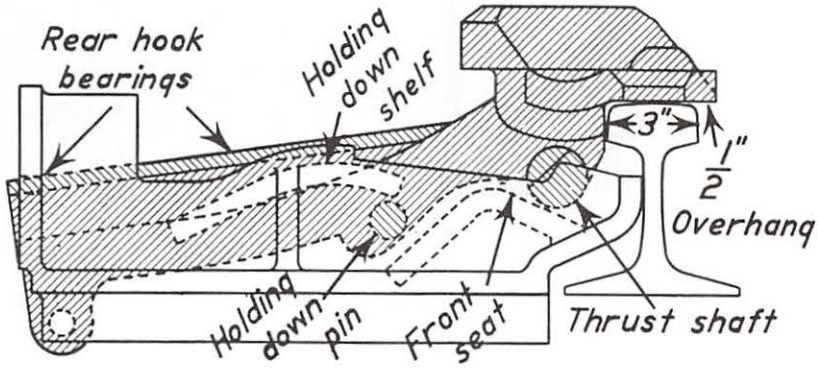
Right and Left: Looking in the direction of movement of a car to be derailed a right hand derail goes on the right hand rail and derails toward the right. Conversely with the left.

Curves: A derail should not be put any place where the wheels have a tendency to bind against the opposite rail. On a curved track put the derail on the outside rail of the curve, ordering a right or left accordingly.

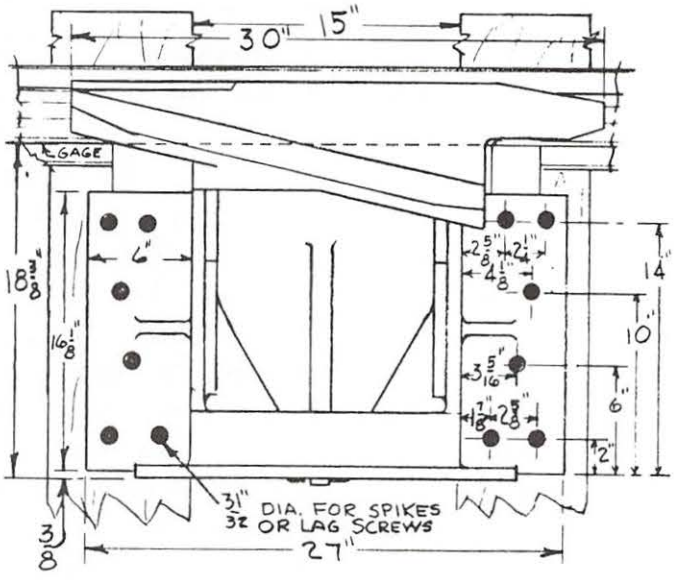
Installation: A circular giving full information for installing is furnished for each size of derail.

Stroke: The stroke of Model HB is 6¼ inches; this takes care of the wider derail shoe.

Length of derail shoe: The derail shoe has a length of 30 inches and the design is such that the wheel is not derailed until it reaches nearly the end of the shoe. This provides an easy derailing angle and pulls the wheel off the opposite rail much less abruptly than in previous designs.



Showing ½" overhang of shoe beyond rail head



Plan showing attaching holes and length of derail shoe

Experience with thousands in track proves that HB can be relied on to put the heaviest equipment including diesels on the ground. An HB Derail should be used at every turnout from the main track to protect the main track.

Let us send you circulars in regard to ordering bumping posts, cushion wheel stops and other track material.

WC Hayes

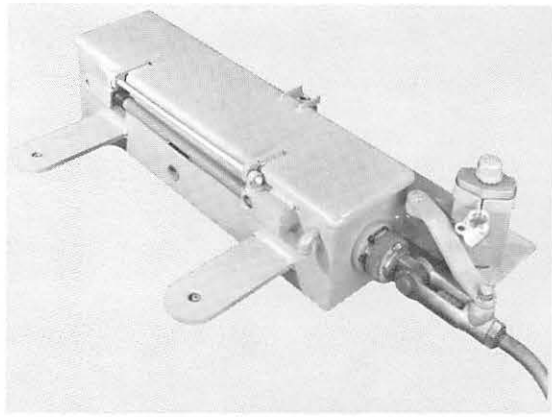
WESTERN-CULLEN-HAYES, INC.

HAYES PLANT, 120 NORTH 3rd STREET, P.O. BOX 756
RICHMOND, INDIANA 47374 — (317) 962-0526

DERAIL OPERATOR SYSTEM

For Railroad Signal Applications

- Use with clearance point derails at turnouts entering main line
- Replace difficult-to-maintain piping at pipe-connected derails
- Blue Flag protection at car and locomotive repair/service facilities

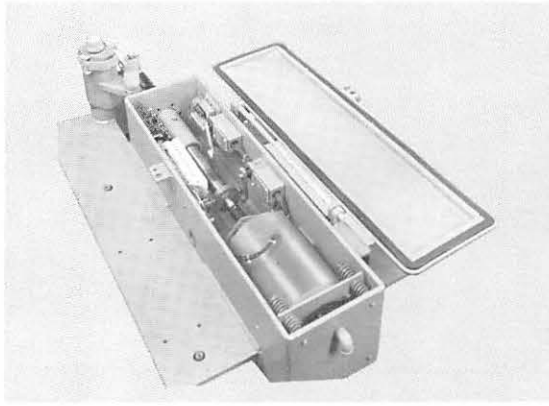


Model 409 DeLectric Derail Operator

SPECIAL FEATURES

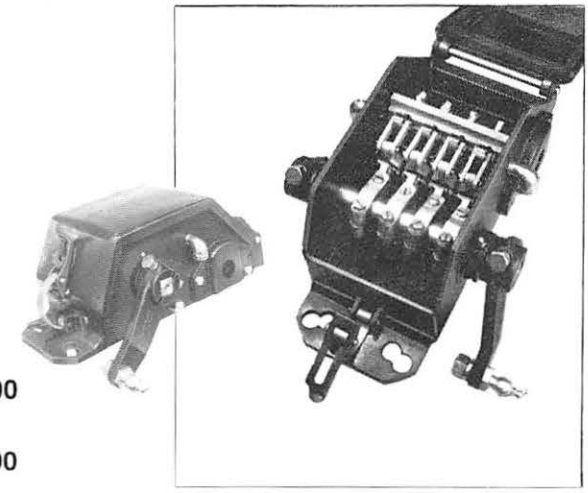
Model 409 DeLectric Derail Operator

- 20-24 VDC Operation
- Self-restoring overload protection
- Lockable cover for Emergency Throw Lever Socket
- Power disconnect indicator circuit—for safe use of Emergency Throw Lever and power-off indication for signal system
- Knife switch power disconnect



Model 100 Circuit Controller

- Four normal/reverse contacts, positively driven
- Two position indications—"open" and "closed"
- Individually adjustable cams
- Contact response satisfies AAR requirements



Model 100 Circuit Controller

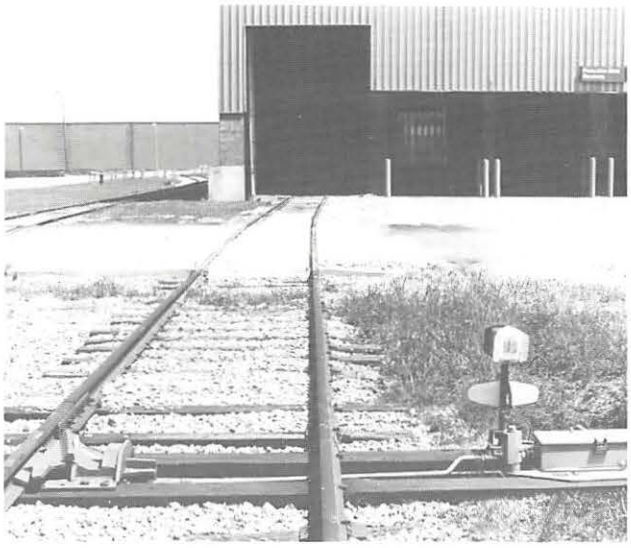
ORDERING REFERENCES

Model 409 DeLectric Derail Operator w/Derail Operating Rod	**409-00-00**
Model 100 Circuit Controller w/Crank (5⅜" lg, ¾" offset)	**38-0100-100**
Derail Connecting Rod w/Ball Socket & Clevis	**38-0100-200**

Printed in USA MP2M

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632

Protect People, Plant and Equipment Automatically... with a DeLectric® OPERATOR and an HB or KA Series DERAIL



- Improve Safety
- Reduce On-Going Costs Of Blue Flag/OSHA Law Compliance
- Reduce Potential For Damage To Overhead Doors
- Improve Switching Crew Efficiency: 1½ second throw speed
- New, Model KA Derail — allows use with center-of-track-mounted car pullers
- Supplied In Three Models, For AC And DC Operation

The W-C-H DeLectric Operator with Model HB or KA Series Derails provides dependable automatic protection for personnel working in or on cars, on plant spur tracks or in areas such as loading docks, repair tracks and shops. The unique device offers excellent automatic plant door protection. It can be circuited so that closing the door sets the DeLectric protection in service, prohibiting moving rail cars from entering work or plant area. Opening the door can automatically remove the derail, permitting rail cars to enter the protected area. The DeLectric can be used to trigger a number of warning devices such as horns, sirens, lights and power blue flags.

Sturdy welded case is ⅜" steel and has die-formed steel cover with wear-resistant gasketing. Rugged construction over-size motor and life-time lubrication assure long dependable service life and minimum maintenance.

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, IL 60632
Telephone 312-254-9600 • FAX 312-254-1110

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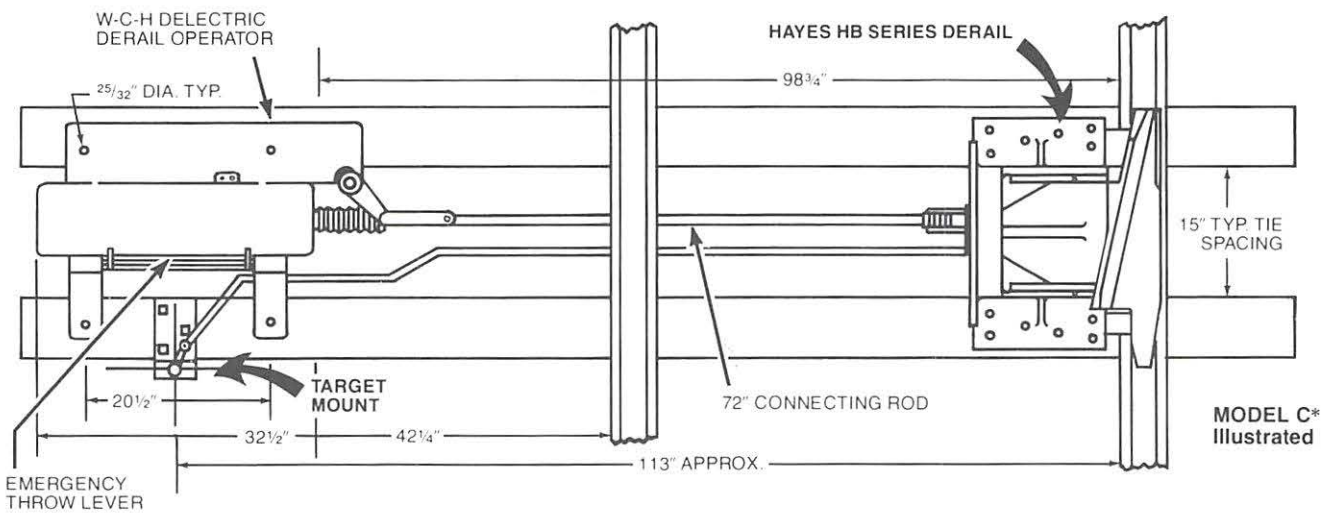
120 North 3rd Street • P.O. Box 756 • Richmond, Indiana 47374
Telephone: 317/962-0526

DESCRIPTIVE DATA

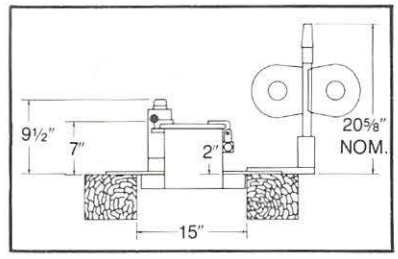


MODEL A—For 20VDC (nominal). Use with 20 volt battery.
Current: 17 amps., 340 watts.
PN: 403-00-01

MODEL B—For 3-phase AC. Specify 240 or 480 volts.
Current: 240 volts, 4 amp.—480 volts, 2 amp.
.960 KVA.
PN: On Application

***MODEL C**—For 1-phase AC. Specify 120 or 240 volts.
Current: 120 volts, 8 amp.—240 volts, 4 amp.
.960 KVA.
PN: 120 VAC, 401-00-01
PN: 240 VAC, 417-00-00

ALL MODELS
Weights:
Operating Unit Only ..... 250 lbs.
Local Controller ..... 19 lbs.
(6"x11"x7⅜")
Target Mount ..... 36 lbs.
(Incl. Conn. Rod)
Right-Angle Crank ..... 62 lbs.
(Incl. Rod)
Dimensions of Operating
Unit: 12"x24½"x38¼"
Target Mount—PN: 412-00-00. Specify Colors.
Rod for Above—PN: 412-05-00



ACCESSORIES

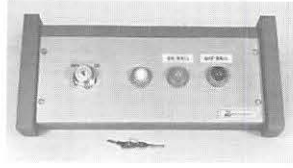
SWITCH LAMPS

Poly-carbonate plastic type. Complete with single contact, bayonet base bulb socket and cable grip. Available in green, yellow, red, blue and white. Specify two colors. Consult with serving railroad before specifying. Fits standard lamp tip furnished with target mount.
Dimensions: 7½"x7½"x8"H.
Weight: 3 lbs. Part No.: 38-0080-4

Cast aluminum type. Complete with single contact bayonet base bulb socket and cable grip. Targets and lenses available in several color combinations. Consult with serving railroad before specifying. Fits standard lamp tip furnished with target mount.
Dimensions: 10⁷/₁₆"x10⁷/₁₆"x12⅜"H. Weight: 15 lbs.
Part No.: 1880 Series

LOCAL CONTROLLER OR "REQUEST TO PROCEED"

The unit bolts in place on the wide flange of the DeLectric. The enclosed heavy-duty contactor is connected to proper terminals through the access opening in the side of the DeLectric. Locks in either on-rail or off-rail position with standard switch padlock.
Part No.: 413-00-00



CONTROL CONSOLE

Single unit control.

Console equipped to control one DeLectric. Two position key-type switch provides security. Key can be removed in either position. Contact configuration two normally closed contact per position. Current capacity of contact is 60 AMPS make, 6 AMPS break, 10 AMPS continuous, at 120 VAC. Complete with "Derail-On" and "Derail-Off" lighted indications.
Dimensions: 6¾"Hx10½"Wx16"L. Weight: 4 lbs.
Part No.: 415-03-00
Also available in Wall-Mount model.

RIGHT ANGLE CRANK

Space limitations sometimes require DeLectric to be mounted parallel to the track. This is accomplished with the use of the Right-Angle Crank. Comes complete with 30" Crank/Derail Operating Rod.
Dimensions: 3⅝"Hx13"Wx16¾"L.
Weight: 62 lbs. with rod. Part No.: 410-04-00

For further information or special applications write us.

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, IL 60632
Telephone 312-254-9600 • FAX 312-254-1110

Printed in U.S.A.

Safety and dependability:
standard with Western-Cullen-Hayes

Blue Flags

Meet FRA rules, OSHA requirements

Portable Blue Flag Model RBF & RBFL

Rail Clamp Design. Universal fit. RBFL has locking provision. Available with battery-powered blue light accessory. Specify type flag message and if light is desired.
Weight: 14 lbs. w/o light—RBF.
Weight: 16 lbs. w/o light—RBFL.

Portable Blue Flag Model BF

Spike Staff Design. Has self-contained driver. Pointed for applying to ties or ballast. Available with battery-powered blue light accessory. Specify type flag message and if light desired.
Weight: 12 lbs. w/o light.

Permanent Blue Flag Model BFH Folds Down Flush Ground Level

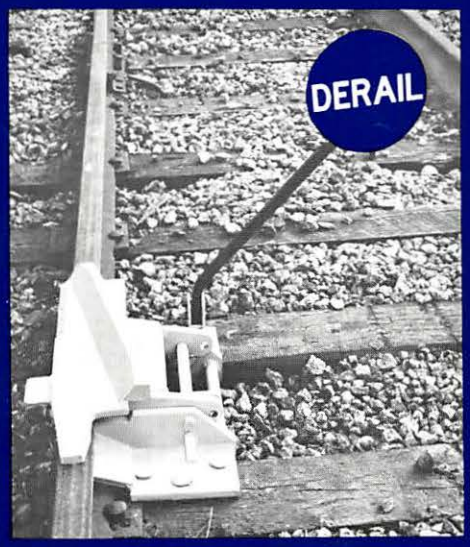
Hinged Design. Simply spike base to tie in center of track. To lower, lift staff from holder, then lower to horizontal position. Available with battery-powered blue light accessory.
Weight: 12 lbs. w/o light.

(Right Hand-TS)

Derail Equipped Blue Flags

Model TS Portable Derail with Blue Flag

Model TS Portable Derail backs a blue flag warning with a positive derail safety measure for temporary protection of working areas or car during loading. The derail is rugged, all-welded steel construction. Easy to install; no special tools required. Single direction throw. Can be padlocked. Fits standard "T" rail 75 lbs. to 136 lbs. Specify right or left and flag style.
Weight: 44 lbs. w/o light.



(Left Hand-EBF)

Model EBF Permanently Installed Derail with Blue Flag

Model EBF, a heavy duty permanently mounted hinged derail, featuring an integral Blue Flag that can be equipped with a battery-powered blue light. Meets requirements of Blue Flag rules for track where consistent use of Blue Flag Derails are necessary. Specify size, right or left and flag style.
Weight: 155 lbs. w/o light.

Full details on EB Series and other derails are available in Hayes Track Products section of our catalog.

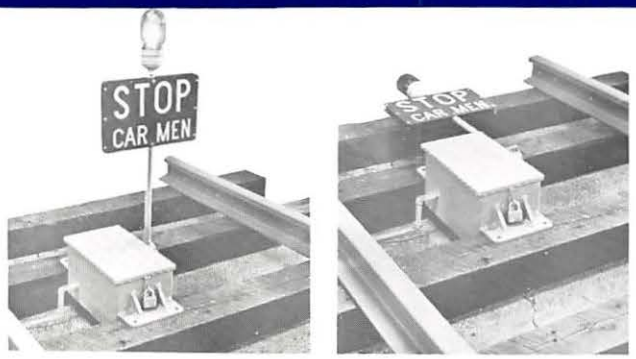
WESTERN-CULLEN-HAYES, Inc.
120 North 3rd Street • P.O. Box 756
Richmond, Indiana 47374 • Telephone: 317/962-0526

1 2 3 4 5 6 7 8 9

10 11 12 13 14 15 16 17 18

Eighteen Standard Flag Styles Available (Special signs made on order)

All Blue Flag products can be equipped with any one of the eighteen standard flags shown above or, at additional cost, with a flag lettered to your specifications. All flags are 14 gauge steel, white letters on blue background. Reflectorized flags also available. Letters: 4" high main message; 2" high other words. All flags equipped with lantern hook. Styles 1-4 are 10" circular. Styles 6, 12, 18—15" x 18", Style 10—11" x 9", Style 14—10" x 14". All other styles are 12" x 15". Other colors also available.



Power Blue Flag Model PBF

A remote controlled Power Blue Flag provides the ultimate in blue signal protection for men working on or in railroad cars. Built to survive abuse, it saves countless expensive labor hours by permitting remote replacement of FRA- and OSHA-required blue signal protection. A mercury switch circuit closure permits a positive readback indication of flag position. Your choice of flag message.

Additional Features: **Lockable Cover — Flag Staff rotates in bronze bearings with "O" ring seals. — Can be used in conjunction with DeLectric® Derail Operator.**

Specifications:

Materials: Case — 3/8" HR Steel.
Case Cover — 12 gauge steel floorplate.
Flag Staff — ¾" Ex. Hvy. Pipe.
Blue Flag — 16 gauge aluminum.
Light — 50 watt, rough service bulb housed in high-impact plastic globe. Neoprene gasket seat to assure dryness.

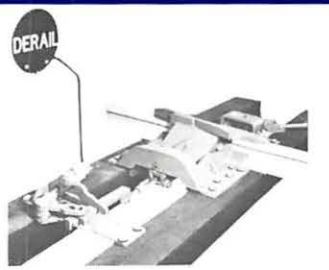
Finish: Case & Staff — Battleship Gray Enamel.
Flag — White reflectorized letters on a blue reflectorized background.

Weight: Weight — 120 lbs. (Case and Flag).

Dimensions: Case — 10" H x 10-¾" W x 16-¾" L.
Flag — 12" H x 15 " W.
Length Over Mounting Flanges — 24-¼".
Flag Upright — 30" above ties.

Electrical: Motor — 120 VAC, 50-60 Hz, 1.3A to full load.
Relays — Plug-in type, SPDT, contacts rated 10A/115 VAC Industrial grade.
Limit Switches — SPDT, contact rated 10A/120 VAC.
Mercury Switch — Differential angle 12° maximum, contact rated at 4/5A/115 VAC.

Technical Manual and Circuit Schematics available on request.



Automatic Mechanical Blue Flag Model AMBF

Provides clearly visible warning. Automatically situated in the upright position when the derail is on-rail. This device can be purchased as part of a unit (Derail, Operating Stand and AMBF Blue Flag) or independently for adding to existing Hayes® HB or KA series derail equipment. Not for double throw derails. Use right hand flag with right hand derail. Specify flag style.
Weight: 68 lbs.

Paved Area Blue Flag Model PABF

Use in paved areas where other flag types not adaptable. Ideal in heavy vehicular traffic areas. Specify flag style.
Weight: 16 lbs.

Blue Flashing Light Accessory

Battery operated Blue Light with 12 volt bulb. Uses two 6 volt lantern batteries. Photo cell controlled. 7" Blue Lens. Installs on staff of flag or can be used separately on ground. Special fastener for theft protection (wrench provided).
Weight: 5 lbs.

WC Hayes
WESTERN-CULLEN-HAYES, Inc.
120 North 3rd Street • P.O. Box 756
Richmond, Indiana 47374 • Telephone: 317/962-0526

ELDO WESTERN-CULLEN-HAYES Electric Lock Derail Operator

- **PROTECT WORK AREAS, EQUIPMENT** Satisfy FRA, OSHA Requirements
- **MANUAL OPERATION, ELECTRIC LOCK** 120 VAC Operation
- **ONE UNIT, EASY TO INSTALL** Easy to Operate
- **RUGGED CONSTRUCTION** Designed and Manufactured by Western-Cullen-Hayes
- **MANY ACCESSORIES** Flexible System Adaptable to Your Requirements

The Electric Lock Derail Operator (ELDO) is a manual operator of Hayes® HB, KA or HB/Wheel Crowder Series Derails.

Trains entering work areas without warning have caused serious injuries and considerable destruction to plant and equipment. The Electric Lock Derail Operator (ELDO) is designed to protect against such hazards by providing double-checked security for these areas. This is accomplished by electrically locking the operating lever that moves the Hayes® Model HB, HBP or KA Derail, and placing the control for this lock under the supervision of a responsible person/persons in the work area. If a movable door, gate, etc. is involved, the control circuit for the ELDO can be interlocked to prevent the derail from being removed from the derailing position until the door is fully open. Our Target Mount provides a passive indication of derail position to the train crew, and is recommended to be a standard part of all ELDO installations.

This uncomplicated device greatly enhances the security and safety of any railroad-related work area. Workmen know a train is approaching before it can proceed past the derail location. Train crews are responsible for removing and replacing the derail, virtually eliminating the possibility of inadvertent derailment. The simplicity of ELDO encourages proper maintenance, insuring reliable operation, a reduction in potential for serious injuries, and damage to plant and equipment.

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place Chicago, Illinois 60632 • (312) 254-9600

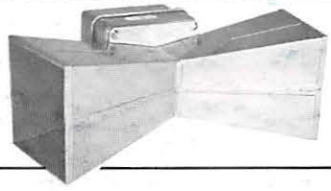
ELDO ACCESSORIES

SWITCH LAMPS
Poly-carbonate plastic type. Complete with single contact, bayonet base bulb socket and cable grip. Available in green, yellow, red, blue and white. Specify two colors. Consult with serving railroad before specifying. Fits standard lamp tip furnished with target mount.
Dimensions: 7½"x7½"x8"H **Weight:** 3 lbs. **Part No.:** 38-0080-4

Cast aluminum type. Complete with single contact bayonet base bulb socket and cable grip. Targets and lenses available in several color combinations. Consult with serving railroad before specifying. Fits standard lamp tip furnished with target mount.
Dimensions: 10 7/16"x10 7/16"x12 3/8"H **Weight:** 15 lbs. **Part No.:** 1880 Series

TRAIN SIGNAL
Polycarbonate housing. Two Light Signal. Top signal red, bottom yellow. 8" lenses. Uses standard traffic signal lamps, 110 VAC, 67 WATT.
Dimensions: 10"Wx20"Hx13"D **Weight:** 8 lbs. **Part No.:** 415-07-00

REVOLVING LIGHT
Reflector rotating around a 25 watt lamp provides 60 attention getting flashes per minute. 120 VAC operation. Mounting flange tapped for ½" conduit or pipe.
Dimensions: 5⅛"Dia.x6¼"H. **Weight:** 2 lbs. **Part No.:** 415-06-00



HORN
Loud (97db at each projector) output alerts workmen. Double projector unit with weather-proof housing for flush mounting. Tapped for ½" conduit. Draws .16 AMPS, 12 WATTS, at 120 VAC.
Dimensions: 4⅜"Hx11½"Wx8½"D **Weight:** 4½ lbs. **Part No.:** 415-05-00

CONTROL CONSOLE
SINGLE UNIT CONTROL Console equipped to control one ELDO. Two position key-type switch provides security. Key can be removed in either position. Contact configuration, two normally closed contact per position. Current capacity of contact is 60 AMPS make, 6 AMPS break, 10 AMPS continuous, at 120 VAC. Complete with "Request", "Derail-On" and "Derail-Off" lighted indications.
Dimensions: 6¾"Hx10½"Wx16"L **Weight:** 4 lbs. **Part No.:** 415-09-00

FOUR UNIT CONTROL CONSOLE As above but with four sets of controls and indications.
Dimensions: 12"Wx16"Lx9½"H **Weight:** 22 lbs. **Part No.:** 415-08-00

DOOR LIMIT SWITCH
For interlocked control of ELDO electric lock, train signal and possible actuation of warning apparatus. MAXIMUM current capacity of contacts is 15 AMPS break, 40 AMPS make, at 115 VAC.

Double Pole, Single Throw
Weight: 1 lb. **Part No.:** 400-55-00
Double Pole, Double Throw
Weight: 1 lb. **Part No.:** 400-14-00

RIGHT ANGLE CRANK
Space limitations sometimes require ELDO to be mounted parallel to the track. This is accomplished with the use of the Right Angle Crank. Comes complete with 30" Crank/Derail Operating Rod.

Dimensions: 3⅝"Hx13"Wx16¾"L
Weight: 49 lbs.wo/rd. **Part No.:** 410-00-00
Crank & Rod:
Weight: 62 lbs. **Part No.:** 410-04-00

EXTRA LENGTH OPERATING RODS
For use where laws require placement of equipment no closer than 8'6" from center line of track.

For ELDO
Weight: 38 lbs. **Part No.:** 416-19-01
For Target Mount
Weight: 14.5 lbs. **Part No.:** 412-08-00

WC Hayes
WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place
Chicago, Illinois 60632 • (312) 254-9600

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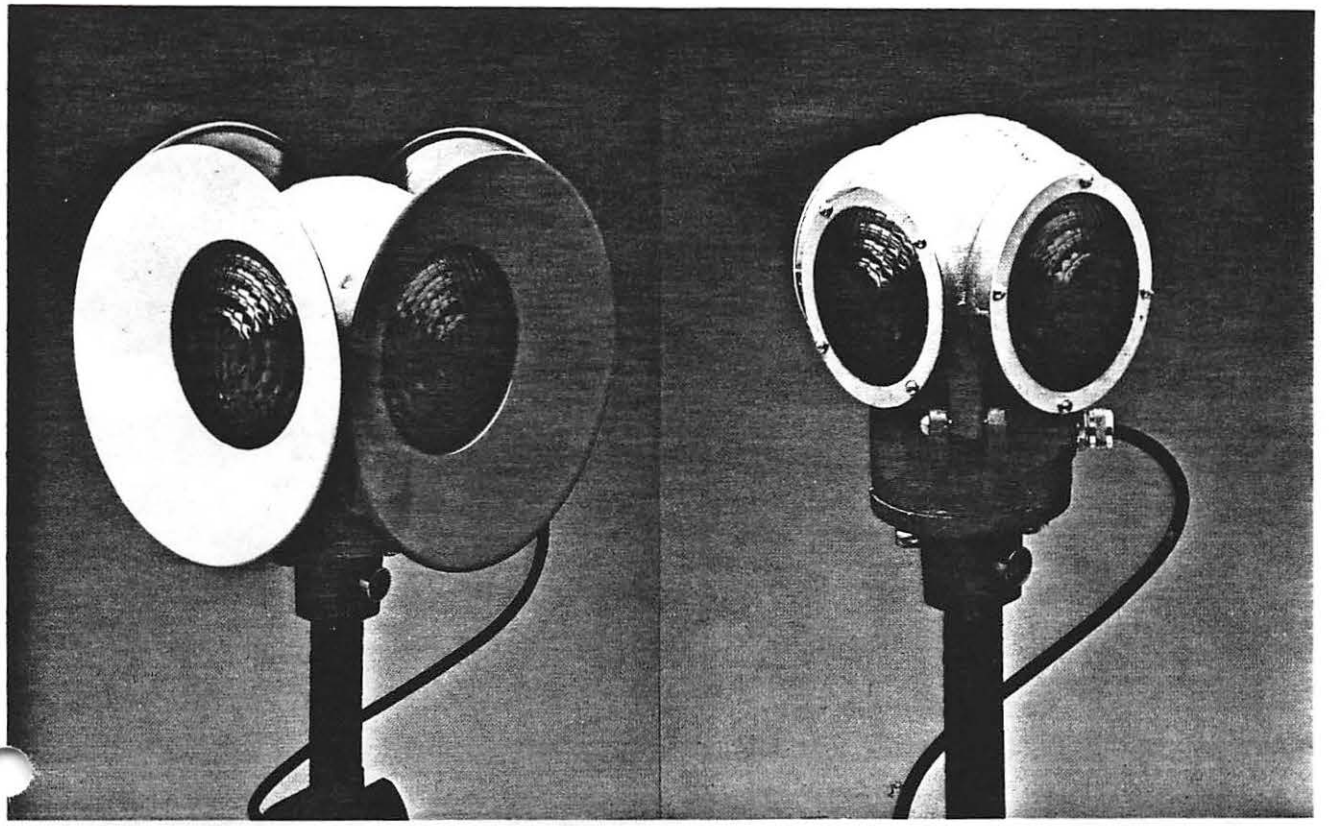
Aluminum models offer many variations to meet specific needs : Types 1870 & 1880



Low-maintenance, cast aluminum switch lamps are configured to satisfy all operating requirements.

Can be furnished to fit any lamp tip—specify dimensions with order.

Many lenses available—see chart below. Type 1870 provides "normal" and "reverse" lenses of different sizes to guard against error during maintenance. With type 1880 all lens openings are of equal size.

[redacted] light bulb sockets—single contact bayonet base [redacted].

Can be furnished with or without targets.

Targets available in several colors—red, green, yellow, white, purple.

Glass Lenses

Lamp Type	Lens Description	Color
1880	5⅜" Dia., 30° Horiz. Spread, 10° Up. Deflection	red, green, lunar white, yellow
1870	4⅛" Dia., 5° Horiz. Spread, 2½° Vert. Spread, 10° Up. Deflection	green, lunar white
1870	4½" Dia., 30° Horiz. Spread	red, green, yellow
1870	4½" Dia., 5° Horiz. Spread, 2½° Vert. Spread, 10° Up. Deflection	red, yellow, lunar white

Plastic Lenses—resist breakage

Lamp Type	Lens Description	Color
1880	5⅜" Dia., 30° Horiz. Spread, 10° Up Deflection	red, green yellow, purple
1870	4½" Dia., with reflective outer ring	red and yellow
1870	4⅛" Dia., with reflective outer ring	green

How to order

Specify type of switch lamp desired and indicate options preferred (as itemized above). Also indicate whether or not light bulbs are to be furnished with lamps.

Package systems available simplify the material acquisition process

Package No. 1—For primary battery operation

Package No. 1 is complete with:

One Western-Cullen Electric Switch Lamp (specify type of lamp, lens and target colors, lamp tip dimensions, etc.).

One No. 1245A-40P "Everlast" Battery Box to accommodate Edison Type ST Carbonaire battery, or equal (if battery is to be supplied, please so specify).

4 to 15 feet of 2-conductor neoprene covered cable (as specified).

Three cable clamps (for securing cable to switch stand staff).

Package No. 2—For commercial current operation

Package No. 2 is complete with:

One Western-Cullen Electric Switch Lamp (specify type lamp, lens and target colors, lamp tip dimensions, etc.).

One Type 1183-50 Underground Cable Terminal complete with voltage step-down transformer. Transformer will operate 10 volt, 0.3 ampere lamps from 115-volt, 60 cycle source. One transformer will handle up to four Switch Lamps.

4 to 15 feet of 2-conductor neoprene covered cable (as specified).

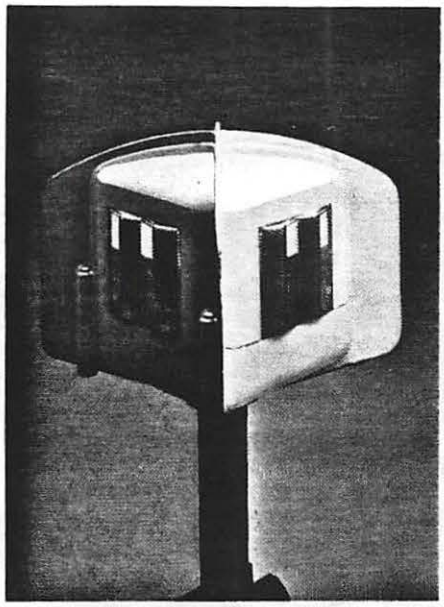
Three Cable Clamps (for securing cable to switch stand staff).

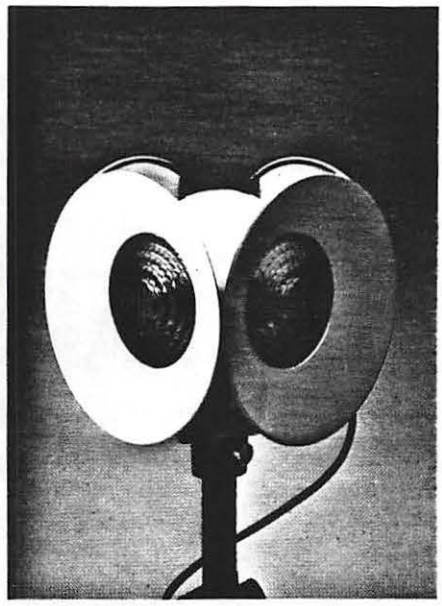
When ordering

The above packages can be supplied with any of the Switch Lamps featured in this brochure.

Please furnish the information identified as necessary when specifying your particular choice of Switch Lamps.

Three high-visibility models, built for a lifetime





Provide brilliant, steady light

Allow safer yard operation with independent source of light for switch position indication

Increase night operating efficiencies

No flammable fuels to handle, no open flame

Reduce maintenance costs 50% over oil burning type

Theft-proof design

For both battery and commercial current

A bright idea that improves system safety records.

Western-Cullen Switch Lamps project a bright light straight down the right-of-way for maximum visibility.

And these Western-Cullen safety products will pay for themselves in two years' time by reducing your weekly operating and maintenance costs—significantly.

Consider the added security a train crew feels looking up a ladder track and determining switch position before a locomotive headlight beam hits a reflector—only target. You save time and *money* when a lighted indication is provided.

You have a choice of lamps made from two low-maintenance materials: virtually indestructable polycarbonate (Lexan®) plastic and durable, light-weight aluminum.

No fire hazards.

They completely eliminate the hazard of handling or storing flammable fuels, or the danger of open flames at each switch stand.

Plan now to provide your train crews with electric light switch position indicators. Western-Cullen is the brand to specify.

New "Fail-Safe" model is both a lamp and a reflectorized target

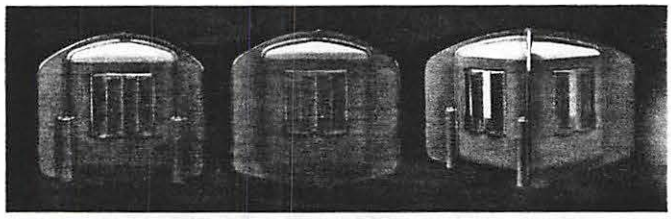
Designed for high visibility—night and day—the new Western-Cullen "Fail-Safe" model has already established a record of reliable performance.

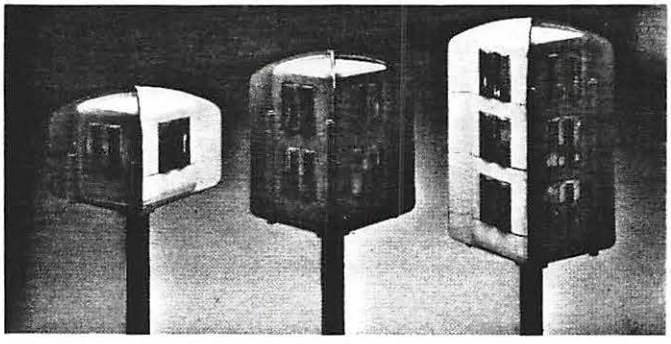
It functions as an Electrified Lamp with fast, convenient bulb replacement, and as a "Fail-Safe" Reflectorized Target, should the bulb burn out.

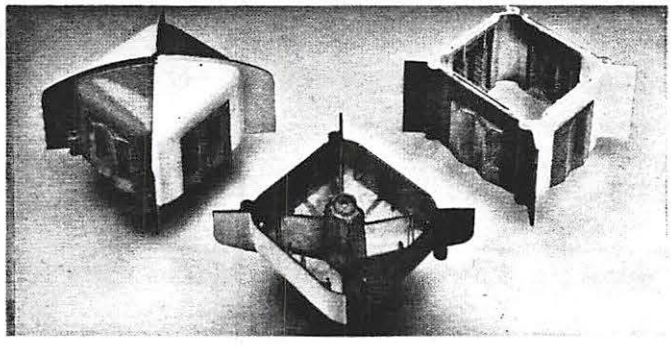
An exclusive (U.S. Patent No. 3,458,245) "M" shaped lens doubles as a wide angle reflector, providing the "Fail-Safe" indication.

Unique "Cocked Switch" design

They also offer another unique Western-Cullen feature—a special indicator which signals DANGER: COCKED SWITCH! in addition to the traditional normal and reverse indications. Due to the shape of the lens, a double-color indication is displayed to the train crew if the switch point is gapping.







Modular construction

This Western-Cullen Electric Switch Lamp is modular in design to permit you to convert single units, ample for yards, into double or triple units for yard outer limits or main line uses.

All you have to do is insert one or two center modules. A fast, simple job.

Virtually indestructible

It's virtually indestructible, too. Every part of this W-C Electric Switch Lamp housing is made of tough, high-impact poly-carbonate (Lexan®). Theft is discouraged with internal mounting to the lamp tip.

Lenses are impregnated with a special release agent that tends to make them self-cleaning. An ultra-violet inhibitor permits us to guarantee the lens colors for five years. Housings are colored with a special "paint" that becomes part of the casing itself, preventing chipping and the need to re-paint.

Additional features

Designed to fit A.R.E.A. Lamp Tip Standard 251-64. Tip adapter kits or instructions are available to convert other lamp tips. Equipped with a standard single contact bayonet base light socket and cable entrance fitting.

Housings and lenses are available in five colors: red, blue, yellow, white and green.

How to order

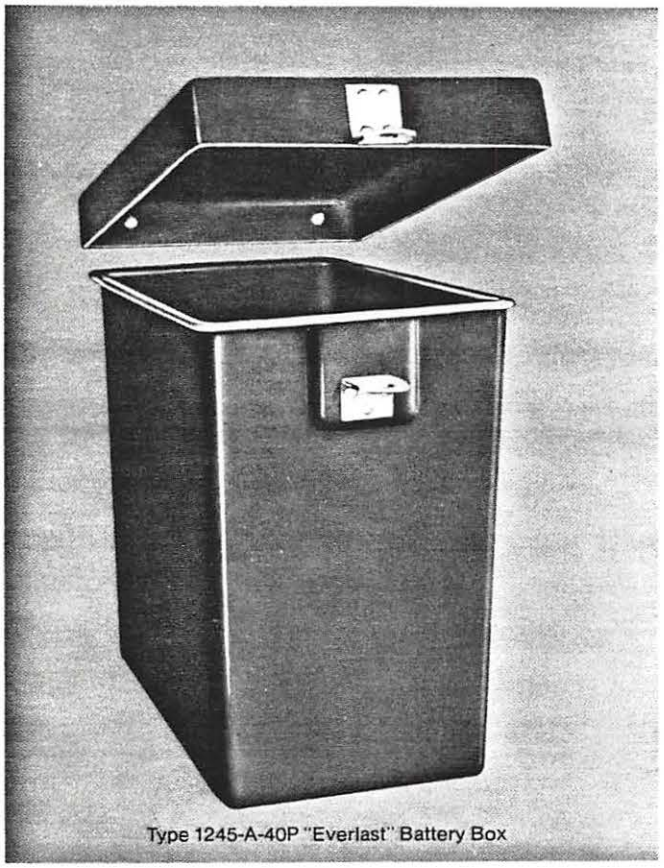
Western-Cullen Switch Lamps are furnished as follows:

Item	Ordering Reference
Single Unit	38-0080-4
Double Unit	38-0080-5
Triple Unit	38-0080-6

Single and double units furnished in standard packages of ten, triple units in standard packages of five. Specify colors of housing and colors of lenses. List "thru" or "normal" switch position colors first. Light bulbs are not furnished. For lamp tips smaller than A.R.E.A. Standard 251-64, adapter kits are available.

Item	Ordering Reference
One Tip Adapter Kit	38-0080-19
10 Tip Adapter Package	38-0080-20

The "Everlast" battery box



Type 1245-A-40P "Everlast" Battery Box

Durable enough to be impervious to chemical attack, rugged enough to withstand ballast damage, the "Everlast" Battery Box sheds spray, sleet, rain and snow.

Yet it's efficient design assures adequate ventilation.

Made of durable reinforced fiberglass, it has two pre-formed ridges in the base of the box which eliminate the need for a wooden platform.

The cover is held in position by two brass retaining studs, permitting the cover to be completely removed when required. A stainless steel hasp permits locking.

WESTERN-CULLEN DIVISION
Federal Signal Corporation
2700 West 36th Place, Chicago, Illinois 60632

Printed in U.S.A. 6/76

cc: K.B.

WESTERN-CULLEN-HAYES, Inc.
2700 West 36th Place • Chicago, Illinois 60632 • Telephone: 312/254-9800 • Telex 25-3206

FAX # 312-254-1110

TO: Don Ostarwisz
USES

DATE: 1/27/94

FROM: Rodney Yousist

REF:

NUMBER OF PAGES, INCLUDING TRANSMITTAL SHEET: 5

We Will Discuss This in the Morning

BLACKWELL STREET MATERIALS:

QTY. 1 G1

MODEL 10 GATE/SIGNAL ASSY. CONSISTING OF A JUNCTION BOX BASE, 5" X 16' MAST, TYPE 3593 GATE MECHANISM, 28' FIBERGLASS GATE ARM WITH 3-4" GATE LIGHTS, HI-WIND GATE BRACKET, 1-WAY BACK LIGHT INDICATION AND WARNING BELL. ALL LIGHTS SUPPLIED WITH 10V-25W LAMPS. LIGHT INDICATION WITH 30-15 DEGREE ROUNDELS WITH 2" HOT SPOT.

PART REF. NUMBER: 3593-131-04-22-31-4100H-64
PRICE: $5,330.00 EA.

QTY. 1

MODEL 10 GATE/SIGNAL ASSY. CONSISTING OF A JUNCTION BOX BASE, 5" X 16' MAST, TYPE 3593 GATE MECHANISM, 28' FIBERGLASS GATE ARM WITH 3-4" GATE LIGHTS, HI-WIND GATE BRACKET, 1-WAY BACK LIGHT INDICATION AND PINNACLE. ALL LIGHTS SUPPLIED WITH 10V-25W LAMPS. LIGHT INDICATION WITH 30-15 DEGREE ROUNDELS WITH 2" HOT SPOT.

PART REF. NUMBER: 3593-131-04-22-30-4100H-64
PRICE: $5,088.00 EA.

QTY. 1

TYPE CAS WALKOUT CANTILEVER ASSY. WITH 12" MAST, 22' ARM WITH 20" WALKWAY, 1-WAY INDICATION ON THE ARM TIP, THREE 1-WAY INDICATIONS ON THE MAST, CROSSING AND 2 TRACK SIGNS AND PINNACLE. ALL LIGHTS SUPPLIED WITH 10V-25W LAMPS. ARM LIGHTS WITH 20/32 DEGREE ROUNDELS, MAST LIGHTS WITH 30/15 DEGREE ROUNDELS WITH 2" HOT SPOT.

PART REF. NUMBER: CAS-22-04-04-04-24-30-61
PRICE: $8,001.00 EA.

QTY. 1

TYPE CAS WALKOUT CANTILEVER ASSY. WITH 12" MAST, 18' ARM WITH 20" WALKWAY, 1-WAY INDICATION ON THE ARM TIP, 1-WAY FRONT INDICATION ON THE MAST, CROSSING AND 2 TRACK SIGNS AND PINNACLE. ALL LIGHTS SUPPLIED WITH 10V-25W LAMPS. ARM LIGHTS WITH 20/32 DEGREE ROUNDELS, MAST LIGHTS WITH 30/15 DEGREE ROUNDELS WITH 2" HOT SPOT.

PART REF. NUMBER: CAS-18-04-24-30-61
PRICE: $6,688.00 EA.

WESTERN-CULLEN-HAYES, INC.
MODEL 9 & 10 MATERIAL LIST

SALES ORDER: Reference Only DATE: PAGE: 1 OF 2

CUSTOMER:

PURCHASE ORDER: DATE:

END USER: REFERENCE:

LOCATION: Blackwell ST. QUANITY: 1

ASSY. NUMBER: 3593-131-04-22-31-4100H-64

UNIT QTY	TOTAL QTY	SHIP QTY	PART NUMBER	PART DESCRIPTION
1			2149-A-111-G	J.B. BASE
			2149-A-111-K	J.B. BASE. USE W/ POWER SUPPLY
			37-1050-41	POWER SUPPLY
1			715-16 - 1	5" X 16' MAST
			960-28-5	J.B. CROSSARM, 1-WAY, 12" FRONT
1			960-27-5	J.B. CROSSARM, 1-WAY, 12" BACK
			960-58-5	J.B. CROSSARM, 2-WAY, 12"
				J.B. CROSSARM,
				J.B. CROSSARM,
			970-201-	8" LIGHT
2			975-201-RD	12" LIGHT
			975-201-1-	12" LIGHT W/ 24" BACKGROUND
				LIGHT,
			1832-53	10V, 18 WATT LAMP
3			1832-54	10V, 25 WATT LAMP
			3380-	CROSSING SIGN
			3380-811-5	CROSSING SIGN MTG. KIT W/STANDOFFS
			3366-710	STOP ON RED SIGNAL SIGN
			3368-710-C-	TRACK SIGN
			3366-811-5	SORS, TRACK SIGN MTG. KIT W/STANDOFFS
			110-A-8	5" PINNACLE
1			0333-CFR	DC BELL
			0333-CFR-1	AC/DC BELL
60"			RM-125-00002	1-1/2" SEALTITE
1			ST-150	1-1/2" CONNECTOR
1			ST-90150	1-1/2", 90 DEG. CONNECTOR
1			3593-131	MECHANISM
			3594-131-	115 VAC MECHANISM
1			3565-396	MECHANISM SUPPORT
1			38-2502-28	28' FIBERGLASS GATE ARM
				AU/FG GATE ARM

SALES ORDER: _____ PAGE: 2 OF 2

CUSTOMER: Reference Only

UNIT QTY	TOTAL QTY	SHIP QTY	PART NUMBER	PART DESCRIPTION
1			1591-50	GATE LIGHT SET
1			38-0011-47	GATE LIGHT WIRE KIT
			3575-____	BREAK-AWAY ADAPTER
			38-0026-43	ADAPTER CHANNEL
1			38-0026-251-2	CAST BREAK-AWAY ADAPTER
1			38-0027-60	ADAPTER CHANNEL
3			38-0027-13	SHEAR BOLT, 3 PER CAST ADAPTER
4			CC-12-AP-3-0175	1/2" X 1-3/4" MACHINE BOLT
4			RR-00-AP-3	1/2" LOCK WASHER
4			JJ-11-PP-3	1/2" SQUARE NUT
1			3565-101	RIGHT GATE SUPPORT ARM
			3565-102	LEFT COUNTERWEIGHT SUPPORT ARM
1			3565-103	RIGHT COUNTERWEIGHT SUPPORT ARM
			3565-174	COUNTERWEIGHT EXTENSION ARM
1			3565-604	COUNTERWEIGHT SUPPORT S/C 1/3565-601, 1/3565-603, 2/BB-12-JJ-3-0075
3			3562-211	SET SCREW AND NUT, 3 PER CW SUPPORT
1			3562-181-9	COUNTERWEIGHT BOLT
			CC-11-AU-3-0350	CW EXTENSION ARM BOLT
1			3565-104	CLAMP WASHER
1			PP-00-AU-3	1" FLAT WASHER
1			JJ-12-YY-3	1" HEX NUT
			CWHT	COUNTERWEIGHTS IN POUNDS
			1181-9	FOUNDATION
1			3565-180	Hi Wind Bracket
2			3565-607	25# Weight
5			3565-608	50# Weight

SALES ORDER: REFERENCE ONLY DATE: PAGE: 1 OF 1

CUSTOMER:

PURCHASE ORDER: DATE:

END USER: REFERENCE:

LOCATION: Blackwell ST QUANITY: 1

ASSY. NUMBER: CAS-22-04-04-04-24-30-61

UNIT QTY	TOTAL QTY	SHIP QTY	PART NUMBER	PART DESCRIPTION
			38-0001-15	60" ANCHOR BOLT
				ANCHOR BOLT
			HH-12-AE-C	1-1/2" GALV. HEAVY NUT
			PP-00-AX-C	1-1/2" GALV. FLAT WASHER
1			960-54-XA-SCL	MAST CROSSARM, 1-WAY, 8/12" FRONT
1			960-60-SPL	MAST CROSSARM, 1-WAY, 8/12" ~~BACK~~ SIDE
			960-58-SCL	MAST CROSSARM, 2-WAY, 8/12"
1			960-83-SCL	MAST CROSSARM, 1-WAY, 90 DEG LEFT
1			960-81-4	ARM CROSSARM, 1-WAY, 8/12"
			960-51-4	ARM CROSSARM, 2-WAY, 8/12"
			CC-12-PP-3-02	MAST CROSSARM MTG. BOLT, 2 PER
			PP-00-AP-3	MAST CROSSARM WASHER, 2 PER
6			975-201-RD	12" LIGHT, MAST FRONT/SIDE 30/15
			975-201-ND	12" LIGHT, MAST BACK 70
2			975-201-PD	12" LIGHT, ARM 20/32
			970-201-KD	8" LIGHT, MAST FRONT/SIDE 30/15
			970-201-HD	8" LIGHT, MAST BACK 70
			970-201-JD	8" LIGHT, ARM 20/32
1			3380-710	CROSSING SIGN
			3366-	STOP ON RED SIGNAL SIGN
1			3368-710-C-2	2 TRACK SIGN
2			AE-12-TT-3-03	5/8 MAST CROSSBUCK MTG. BOLT, 2 PER
2			AE-12-TT-3-015	5/8 MAST TRACK/SORS MTG. BOLT, 2 PER
8			PP-00-AR-3	5/8 MAST SIGN WASHER, 4 PER SIGN
4			HH-12-TT-3	5/8 MAST SIGN NUT, 2 PER SIGN
			3380-711-4	ARM CROSSBUCK SIGN MTG. KIT
			0333-CFR	DC BELL
			0333-CFR-2	AC/DC BELL
			REQ#	22 FT. STRUCTURE, SHIPED DIRECT